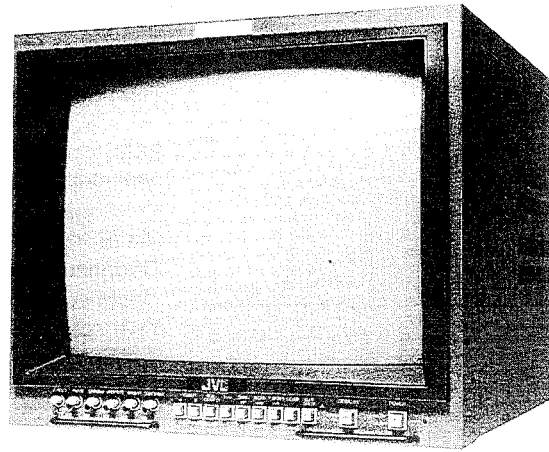


JVC

SERVICE MANUAL

COLOUR VIDEO MONITOR

VM-R150E



■ SAFETY PRECAUTION

As for safety precautions including electric shock prevention, use of designated components, or safety inspection after servicing, refer to the appended PAL/SECAM-C870807.

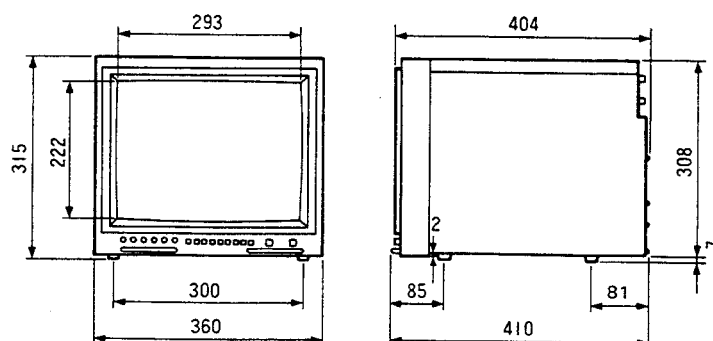
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SPECIFICATIONS

Type	: Colour video monitor
Color system	: PAL system
CRT	: 15" (measured diagonally), 90° deflection, in-line gun medium-high
Screen size (HxV)	: 285 x 213 mm
Scanning frequency	: (H) 15.625 kHz (V) 50 Hz
Horizontal resolution	: More than 500 lines
Power requirement	: AC 220—240 V, 50/60 Hz
Power consumption	: Max. 67 W
Composite video input	
(VIDEO A/B)	: BNC x 4 (2 with bridged output), 1.0 Vp-p, 75 ohms, negative sync Termination switch provided
(VTR)	: 8-pin VTR connector x 1, 1.0 Vp-p, 75 ohms, negative sync
Y/C separate video input	: 7-pin connector x 2 (1 with bridged output) Y: 1 Vp-p, 75 ohms, negative sync C: 0.3 Vp-p, (burst), 75 ohms Termination switch provided
Component video inputs	
(Y/R-Y/B-Y)	: BNC x 6 (Used in common for RGB analogous signals, 3 with bridged output) Y: 1 Vp-p, 75 ohms, negative sync R-Y/B-Y: 0.7 Vp-p, 75 ohms Termination switch provided
(MII)	: 12-pin connector x 1, Y: 1 Vp-p, 75 ohms, negative sync R-Y/B-Y: 0.7 Vp-p, 75 ohms
(BETACAM)	: 12-pin connector x 1 Y: 1 Vp-p, 75 ohms, negative sync R-Y/B-Y: 0.7 Vp-p, 75 ohms
R.G.B. analog input	: BNC x 6 (Used in common for compo- nent video signals (Y/R-Y/B-Y), 3 with bridged output) R/G/B: 0.7 Vp-p, 75 ohms Sync on green 1 Vp-p, 75 ohms, negative
Sync input	: BNC x 2 (1 with bridged output) 1 — 4 Vp-p, 75 ohms, negative; (VBS) 1 Vp-p, 75 ohms, negative sync Termination switch provided
External control connector	
(REMOTE/TALLY)	: 7-pin connector x 1
High Voltage	: 24.0 kV $\pm$ 1 kV (at zero beam current)
Tube	: 1
Transistor	: 144
IC	: 20

Dimensions (Unit: mm)



Weight : 20.5 kg
Accessory: Power cord
(approx. 2 m) x 1

Design and specifications subject to change without notice.

■ FEATURES

- PROVIDED WITH MII FORMAT AND BETACAM TERMINALS.
- PROVIDED WITH Y/C SEPARATE VIDEO SIGNAL INPUT TERMINAL WHICH ALLOWS THE VIDEO REPRODUCED BY S-VHS FORMAT VTR TO BE DISPLAYED CLEARLY.
- MEDIUM-RESOLUTION CATHODE-RAY TUBE (CRT) IS USED TO ALLOW FINE PICTURE TO BE REPRODUCED TRUTHFULLY.
- NOTCH CIRCUIT FOR REDUCING DOT INTERFERENCE OF SCREEN IS INCORPORATED
- PROVIDED WITH EXTERNAL SYNC INPUT TERMINAL TO MONITOR THE VIDEO SIGNAL WITHOUT SYNC SIGNAL.
- PROVIDED WITH A COMB FILTER WHICH NORMALLY IS USED FOR STATE-OF-THE-ART MONITOR TO OBTAIN A HIGH-RESOLUTION SCREEN.
- PROVIDED WITH A METAL CABINET WHICH IS LESS AFFECTED BY THE INFLUENCE FROM OTHER EQUIPMENT.
- UNDER-SCAN CIRCUIT IS INCORPORATED.
- PROVIDED WITH REMOTE/TARRY TERMINAL.

■ OUTLINE

- It is a 15-inch colour video monitor which allows the devices such as S-VHS, VHD, M2 format, and BETACAM to be connected.

■ TRUTH TABLE OF SWITCH IC

A large number of ICs are used in this monitor for each switch selection (SYNC, PULSE etc.). The following shows the switch-on conditions and on channels for your reference.

● TC4053BP (IC4005)

CONTROL SIGNAL INPUT			ON-CHANNEL		
9PIN	10PIN	11PIN	12PIN	2PIN	5PIN
L	L	L	12PIN	2PIN	5PIN
L	L	H	13 "	2 "	5 "
L	H	L	12 "	1 "	5 "
L	H	H	13 "	1 "	5 "
H	L	L	12 "	2 "	3 "
H	L	H	13 "	2 "	3 "
H	H	L	12 "	1 "	3 "
H	H	H	13 "	1 "	3 "
COMMON TERMINAL			14PIN	15PIN	4PIN
IC			TC4053BP		

※ L : LOW VOLTAGE, H : HI. VOLTAGE

※ 8-12, 9-13, ...etc. ; 8PIN & 12PIN, 9PIN & 13PIN ON

● AN5860 (IC1001, 1005, 1006)

CONTROL SIGNAL INPUT	ON-CHANNEL
7PIN	
H	8 - 12 , 9 - 13 , 10 - 14 PIN PIN PIN PIN PIN PIN
L	8 - 4 , 9 - 2 , 10 - 2 " " " " " "

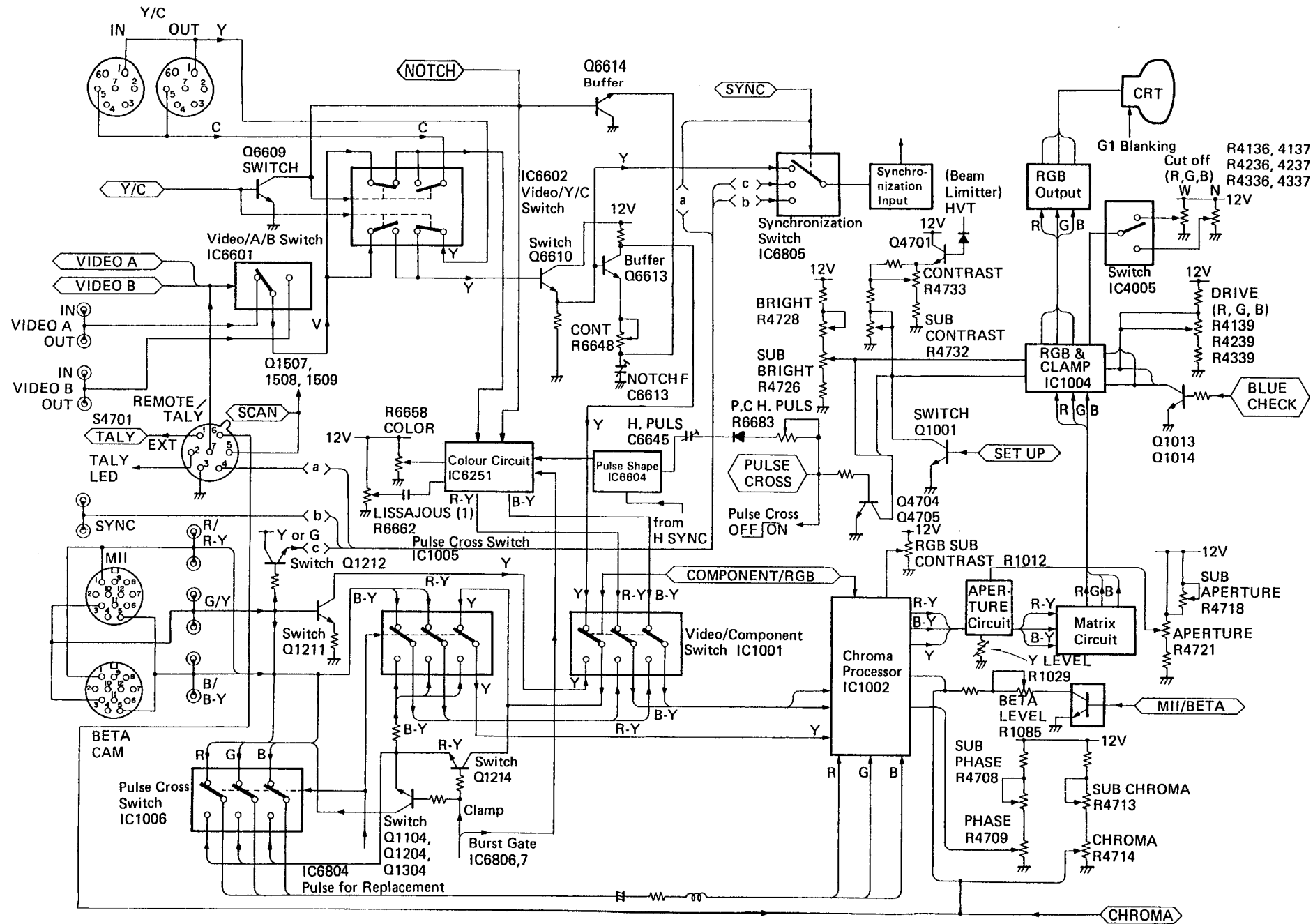
● LA7016 (IC6601)

CONTROL SIGNAL INPUT	ON-CHANNEL
3PIN	
H	4PIN - 2PIN
L	4PIN - 7PIN

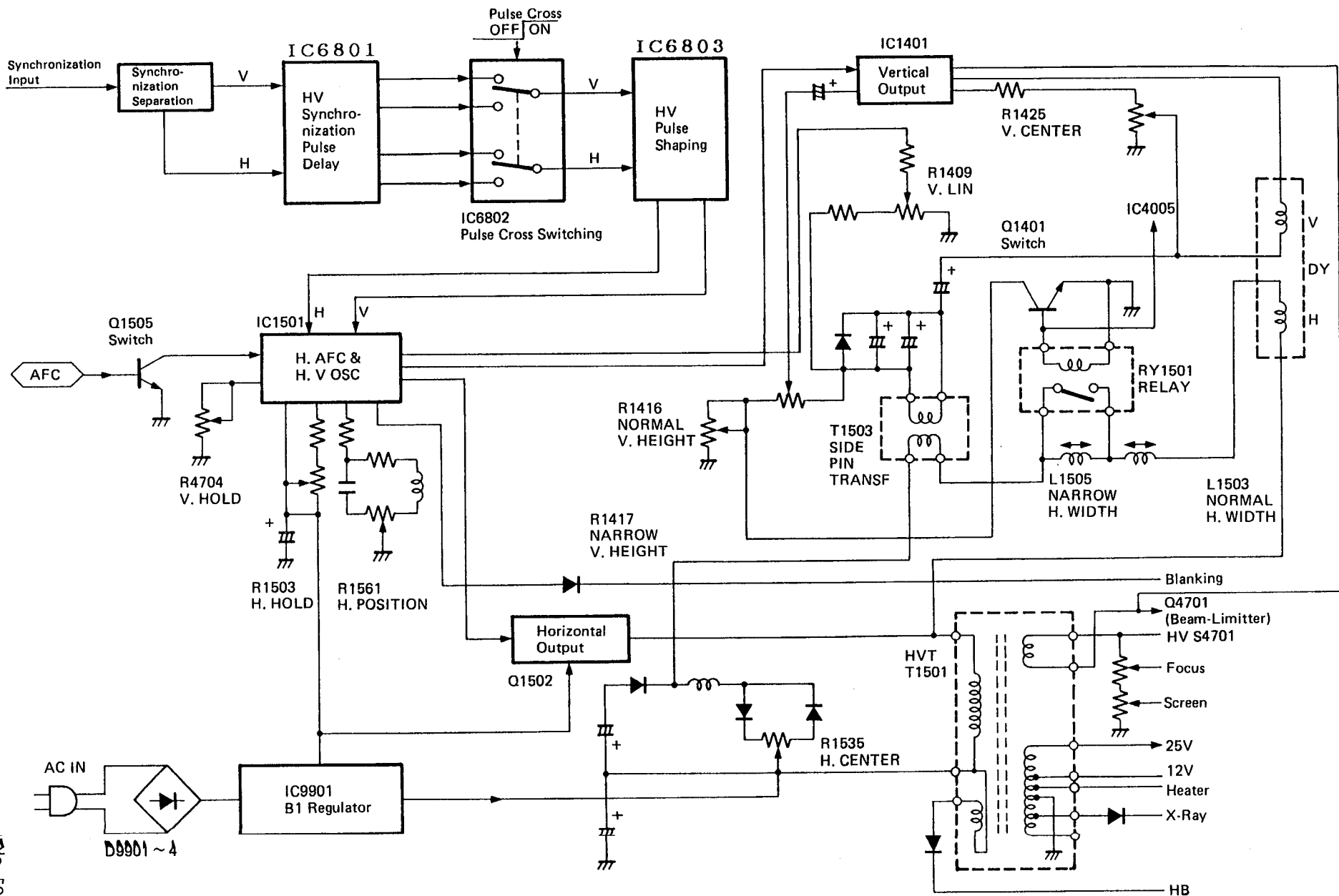
● TC4066BP (IC6602, 6802, 6805)

CONTROL SIGNAL INPUT				ON-CHANNEL
5PIN	6PIN	12PIN	13PIN	
H	\	\	\	4PIN - 3PIN
\	H	\	\	8PIN - 9PIN
\	\	H	\	10PIN - 11PIN
\	\	\	H	1PIN - 2PIN

■ BLOCK DIAGRAM (SIGNAL LINE)

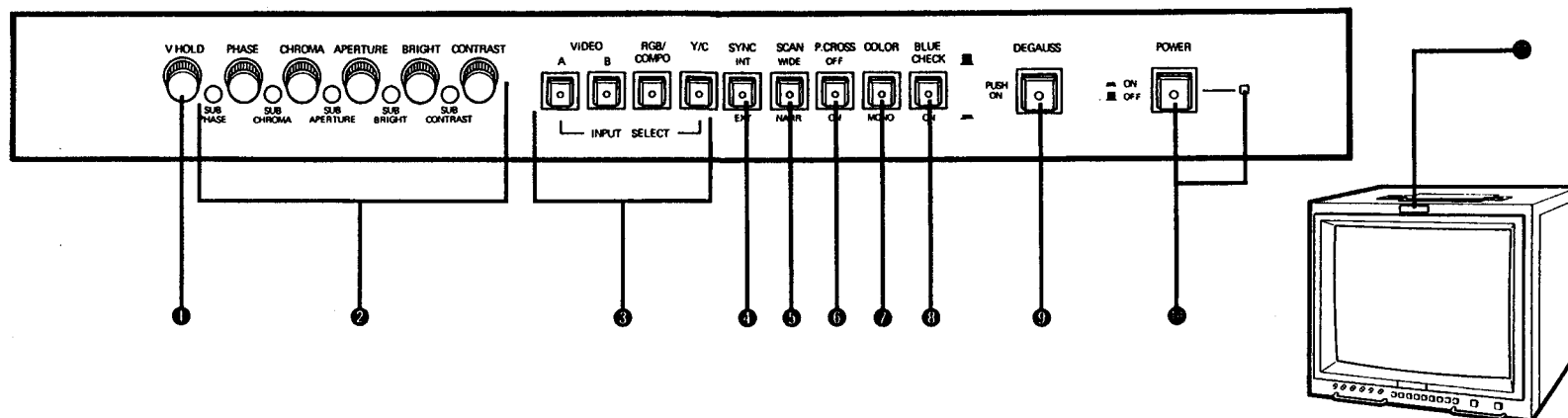


■ BLOCK DIAGRAM (SYNC/DEF LINE)



CONTROLS AND CONNECTORS

(Front Panel)



1 V. HOLD control

Turn to adjust the vertical synchronization of the picture.

2 Picture controls

Use to optimize the picture. The centre click position of each control is its standard setting. This standard setting can be varied (preset) by turning the SUB control screws at the side of the controls. Use a screwdriver to turn the SUB controls.

- **PHASE control**
Turn to adjust the picture hue. Adjust with reference to skin colour.
- **CHROMA control**
Turn to adjust the colour density of the picture to your preference.
- **APERTURE control**
Turn to adjust the contours to your preference.
- **BRIGHT control**
Turn to adjust the picture brightness to your preference.
- **CONTRAST control**
Turn to adjust the picture contrast to your preference.

3 INPUT SELECT switches

Press the switch corresponding to the required input mode, for signals from the corresponding input connector on the rear panel.

Switch setting	Corresponding input connector(s)
VIDEO A	VIDEO A connector
VIDEO B	VIDEO B or VTR*
RGB/COMPO	R/R-Y-G/Y-B/B-Y, MII or BETACAM**
Y/C	Y/C

* Connect to either connector as these connectors are internally connected in parallel.

** Connect to one of those connectors as they are internally connected in parallel.

4 SYNC switch

Switches synchronization between internal and external. When set to the EXT position, input a sync signal to the SYNC connector on the rear panel.

INT (■): For internal sync

EXT (—): For external sync

Note: If switching is to be done using the REMOTE/TALLY connector, set to INT (■).

5 SCAN switch

Switches between overscan and underscan.

WIDE (■): For overscan

NARR (—): For underscan

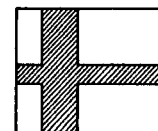
Note: If switching is to be done using the REMOTE/TALLY connector, set to WIDE (■).

6 PULSE CROSS switch

To check the retrace period (sync signal) by delaying the phase of the input signal.

OFF (■): For normal picture

ON (—): For retrace period check display



7 COLOR/MONO switch

Switches picture between colour and monochrome for checking white balance, etc.

COLOR (■): For a colour picture

MONO (—): For a monochrome picture

Note: If switching is to be done using the REMOTE/TALLY connector, set to COLOR (■).

8 BLUE CHECK switch

Switches the picture between normal and monochrome blue, for checking and adjusting the PHASE and CHROMA.

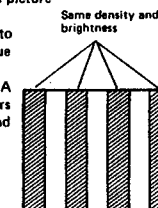
(■): Normal picture

ON (—): Monochrome blue picture

Adjusting procedure

(1) Input the colour bar signal to display a monochrome blue picture.

(2) Turn the PHASE and CHROMA controls so that all blue bars have the same density and brightness.



9 DEGAUSS switch

Press to demagnetize the CRT when colour patches are observed.

Degaussing

Keep this switch depressed for approx. 10 seconds. To use this switch a second time, wait more than 10 minutes.

10 POWER switch/indicator

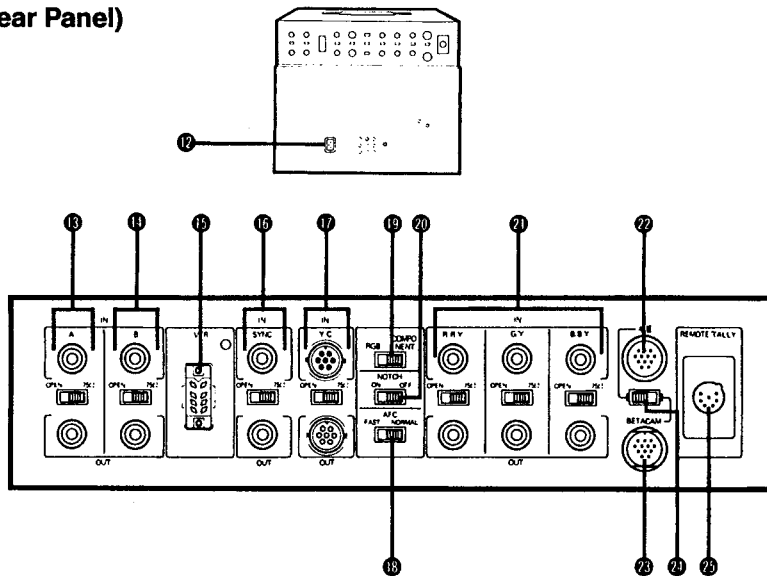
ON (—): To turn the power on. The indicator lights.

OFF (■): To turn the power off. The indicator goes off.

11 Tally lamp

Lights when a tally signal is input to the REMOTE/TALLY connector on the rear panel. (For operation, see "REMOTE/TALLY connector" on page 7.)

(Rear Panel)



12 Power input connector

Connect to an AC outlet with the provided power cord.

13 VIDEO A IN/OUT connectors/Termination switch

Input connector for composite video signal and bridge-connected signal output connector.

IN: When inputting a composite video signal

OUT: For bridged connection

Termination switch

75Ω: When there is only an input signal

OPEN: For bridged connection

14 VIDEO B IN/OUT connectors/Termination switch

Input connector for composite video signal and bridge-connected signal output connector.

IN: When inputting a composite video signal

OUT: For bridged connection

Termination switch

75Ω: When there is only an input signal

OPEN: For bridged connection

Note: This connector is internally connected in parallel with the VTR connector. Therefore, do not connect equipment to both connectors at the same time.

15 VTR connector

Input connector for composite video signal from equipment that is provided with the same type of 8-pin VTR output connector.

Notes:

- This connector is internally connected in parallel with the VIDEO B IN connector. Therefore, do not connect equipment to both connectors at the same time.
- Output function is not provided.

16 SYNC IN/OUT connectors/Termination switch

Input connectors for sync (composite video) signal and bridge-connected signal output connector. Use when the video signal to be input does not contain a sync signal or in external genlock applications.

IN: When inputting a sync signal

OUT: For bridged connection

Termination switch

75Ω: When there is only an input signal

OPEN: For bridged connection

17 Y/C IN/OUT connectors/Termination switch

Input connector for Y/C separate video signals (S-VHS format) and bridge-connected signal output connector.

IN: When inputting Y/C separate video signals

OUT: For bridged connection

Termination switch

75Ω: When there are only input signals

OPEN: For bridged connection

18 AFC switch

Switches the AFC time constant of the horizontal sync circuitry to correct the skewed portion of the picture.

FAST: "Fast" mode. (Smaller time constant.)

NORMAL: Normal mode.

19 RGB/COMPONENT switch

Switches the input mode between RGB analogue and component video signals.

RGB: When RGB analogue signals are input to the R/R-Y-G/Y-B/B-Y connectors.

COMPONENT: When component video signals are input to the R/R-Y-G/Y-B/B-Y, MII or BETACAM connectors.

20 NOTCH switch

Switch for turning the notch circuit on or off. This reduces the dot-interference which may appear at edges in the picture when a composite video signal is input.

ON: To reduce dot-interference. However, this setting degrades the horizontal resolution.

OFF: For normal operation.

21 R/R-Y-G/Y-B/B-Y connectors/Termination switches

Input connectors used in common for RGB analogue and component video (Y/R-Y/B-Y) signals and bridge-connected signal output connectors.

Note: These connectors are internally connected in parallel with the MII and BETACAM connectors. Therefore, do not connect equipment to these connectors at the same time.

- When RGB/COMPONENT switch 19 is set to "RGB":

IN: For RGB analogue signal input.

OUT: For bridged connection.

Note: Set the SYNC switch as follows depending on the sync signal.

Sync signal	SYNC switch
Sync on green	INT ()
No sync signal (Sync signal is input to the SYNC connector)	EXT ()

Termination switch

75Ω: When there are only input signals.

OPEN: For bridged connection.

- When RGB/COMPONENT switch 19 is set to "COMPONENT":

IN: For component video signal input.

OUT: For bridged connection.

Termination switch

75Ω: When there are only input signals.

OPEN: For bridged connection.

22 MII connector

Input connector for MII format component video signals.

Notes:

- Set RGB/COMPONENT switch 19 to "COMPONENT", MII/BETACAM switch 23 to "MI".
- This connector is internally connected in parallel with the R/R-Y-G/Y-B/B-Y and BETACAM connectors. Therefore, do not connect equipment to these connectors at the same time.

23 BETACAM connector

Input connector for BETACAM format component video signals.

Notes:

- Set RGB/COMPONENT switch 19 to "COMPONENT", MII/BETACAM switch 23 to "BETACAM".
- This connector is internally connected in parallel with the R/R-Y-G/Y-B/B-Y and MII connectors. Therefore, do not connect equipment to these connectors at the same time.

24 MII/BETACAM switch

Switches the input mode between MII and BETACAM.

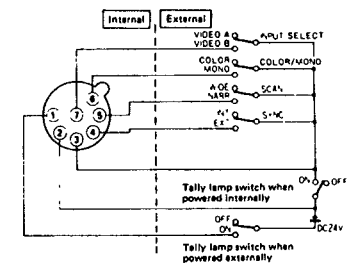
MI: When MII signals are input.

BETACAM: When BETACAM signals are input.

25 REMOTE/TALLY connector

For remote operation of the input switching between VIDEO A/B, the settings of the SYNC, SCAN, COLOR/MONO switches, and lighting of the tally lamp.

[Connection diagram]

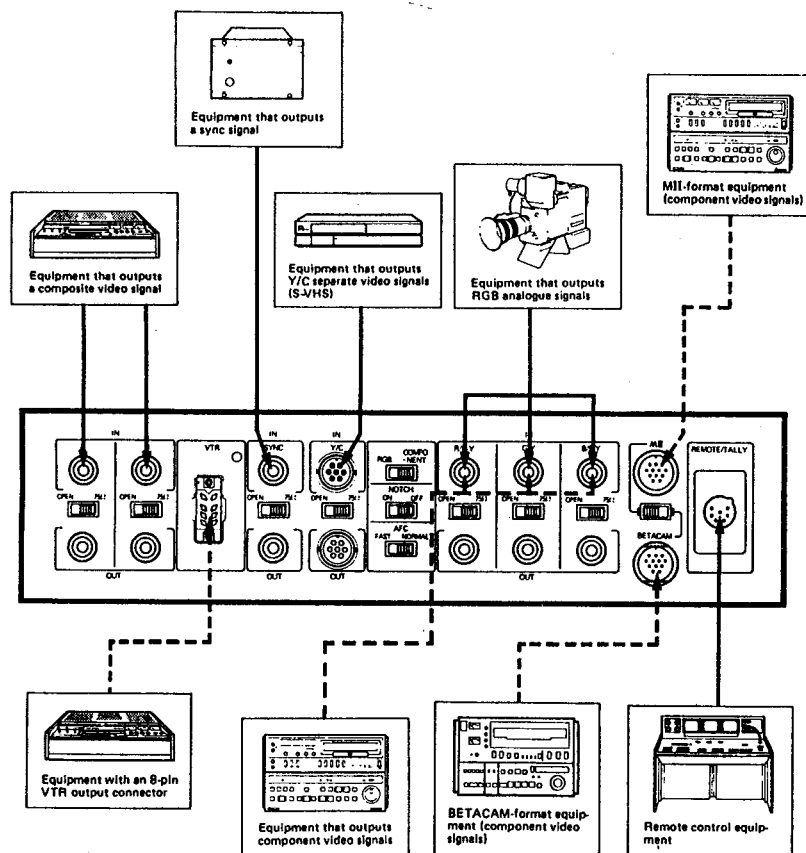


Notes:

- For switching the tally lamp's power source between internal and external, consult your local dealer.
- When using this connector, the front-panel controls should be set as follows:
INPUT SELECT switch: VIDEO A
SYNC switch: INT ()
SCAN switch: WIDE ()
COLOR/MONO switch: COLOR ()

CONNECT

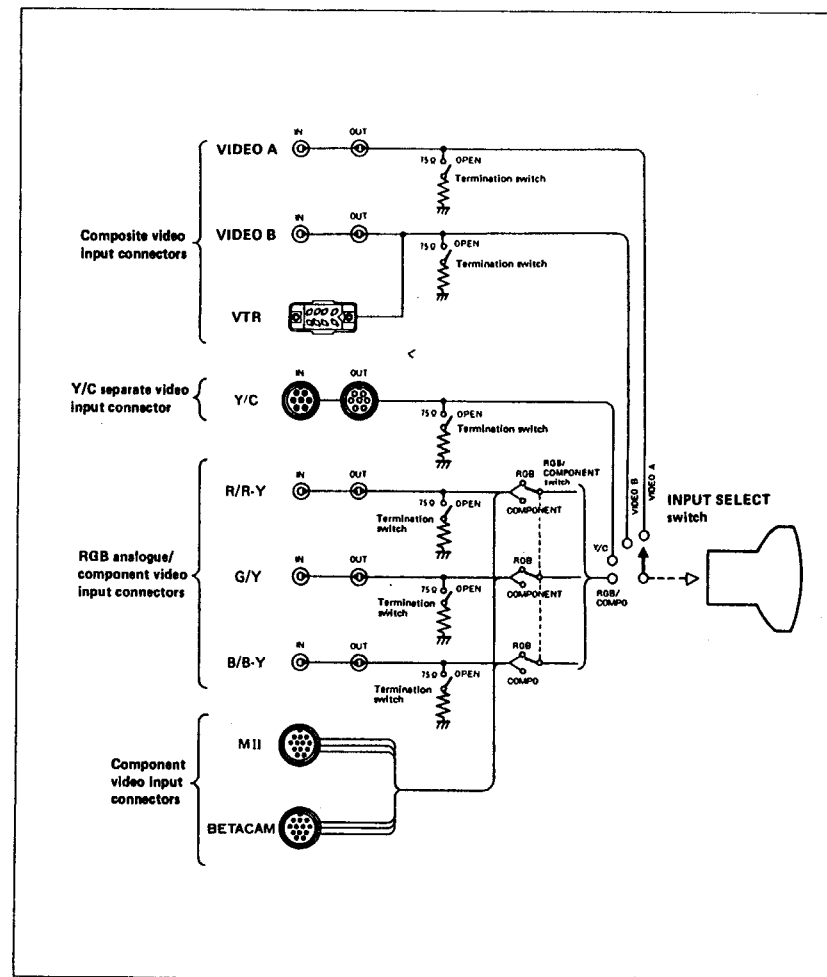
- Be sure to disconnect the power plug from the AC outlet before connecting to other equipment.
- Also refer to the instruction manual of the equipment to be connected.



- When using any of the OUT connectors (bridged output), set its termination switch to "OPEN".

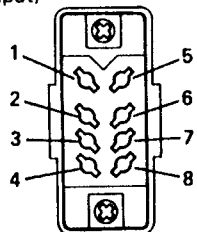
CONNECTIONS OUTLINE DIAGRAM

The following is an outline of the circuitry and connections, showing concepts, it is not a circuit diagram.



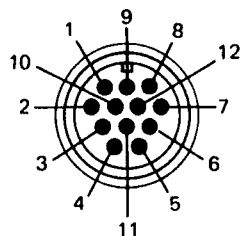
■ PIN ASSIGNMENT

**VTR connector
(Input)**



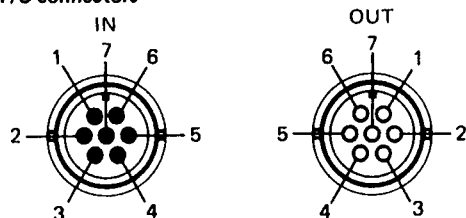
Pin No.	Signal
1	—
2	Composite video
3	—
4	—
5	—
6	GND
7	—
8	—

**MII-BETACAM connectors
(Input)**



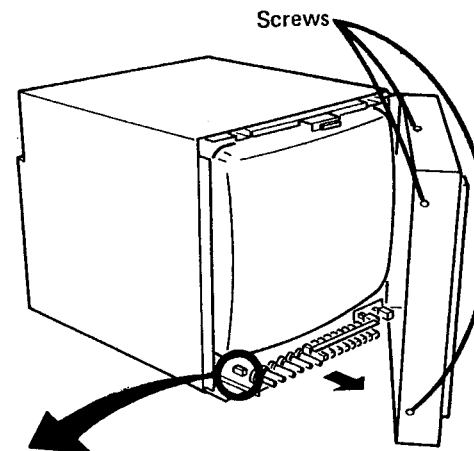
Pin No.	Signal
1	Y
2	GND (Y)
3	R-Y
4	GND (R-Y)
5	B-Y
6	GND (B-Y)
7	—
8	—
9	—
10	—
11	—
12	—

Y/C connectors

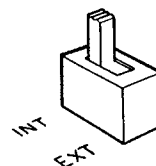


Pin No.	Signal
1	Y
2	GND (Y)
3	—
4	—
5	C
6	GND (C)
7	—

■ HOW TO USE A TALLY SWITCH



Tally switch



After removing 5 screws from the left and right sides as well as the top panel, remove the front panel and draw out the Control PC Board Ass'y a little.

INT side : Lighted with internal power supply
EXT side : Lighted with external power supply

■ HOW TO REMOVE FOR SERVICE

■ HOW TO REMOVE THE REAR PANEL

Remove 12 screws (A) shown in Fig. 1.

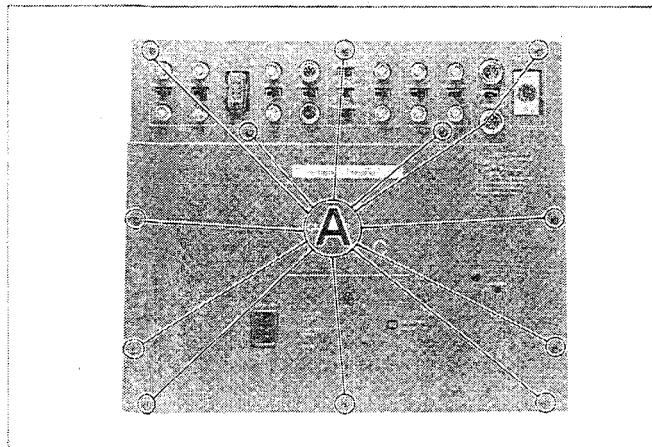


Fig. 1

■ HOW TO REMOVE INPUT PRINTED-CIRCUIT BOARD (TERMINATION ASSEMBLY)

Remove 4 screws (A) shown in Fig. 2 and pull the printed-circuit board toward yourself.

(Previously remove the wire clamp.)

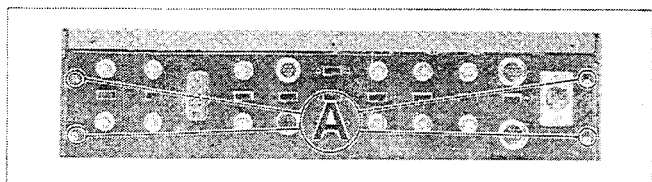


Fig. 2

■ HOW TO REMOVE SIGNAL/DEFLECTION SYSTEM PRINTED-CIRCUIT BOARD (CHASSIS ASSEMBLY)

Remove 2 screws (A) shown in Fig. 3 and pull the printed-circuit board toward yourself.

(Previously remove the wire clamp.)

■ HOW TO REMOVE POWER SUPPLY PRINTED-CIRCUIT BOARD ASSEMBLY

Remove 2 screws (B) shown in Fig. 3 and pull the printed-circuit board assembly toward yourself.

(Previously remove the wire clamp.)

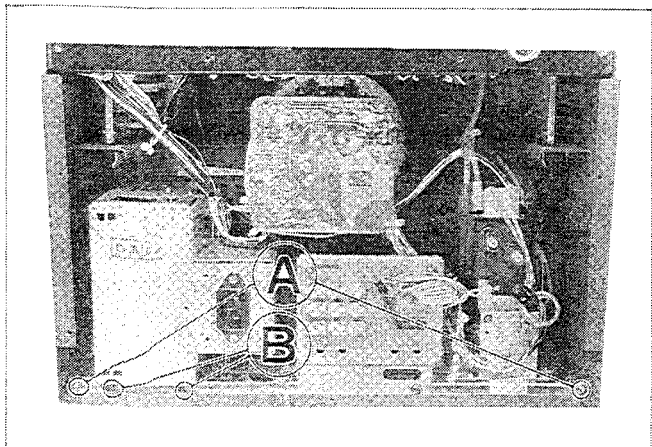


Fig. 3

■ HOW TO REMOVE FRONT PANEL

Remove 5 screws (A) shown in Fig. 4 and pull the front panel toward yourself.

(Previously remove the wire clamp.)

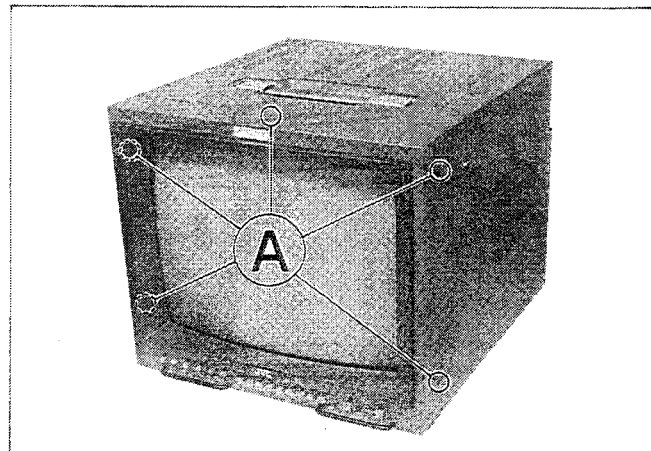


Fig. 4

■ HOW TO REMOVE POWER SUPPLY/DEGAUSS AS SWITCH AND CONTROL PRINTED-CIRCUIT BOARD

Remove 2 screws (A) shown in Fig. 5 and pull the switches and printed-circuit board toward yourself.

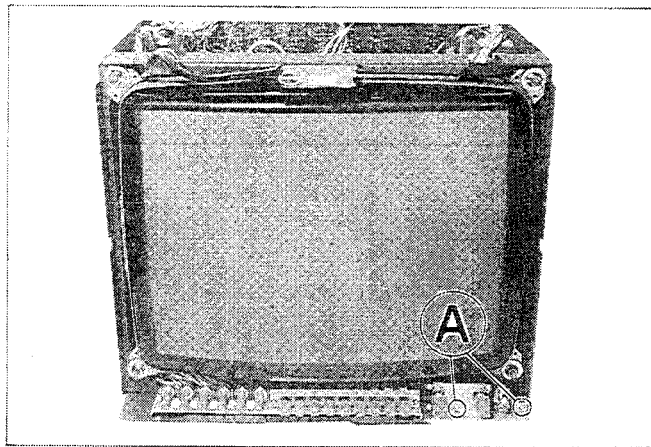


Fig. 5

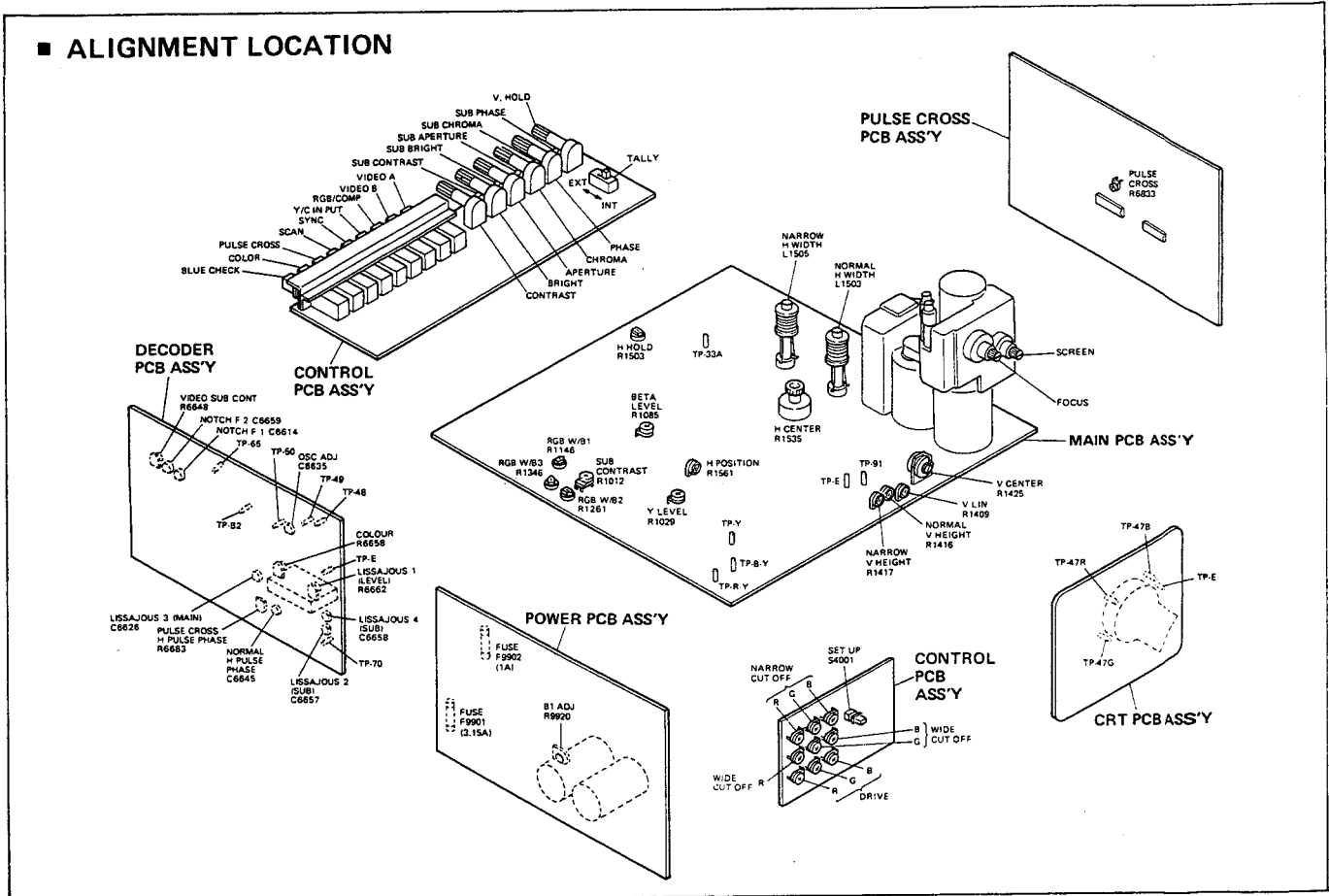
■ WIRE CLAMPING AND CABLE TIES

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

■ SERVICE ADJUSTMENTS

- as for the adjustment of PURITY, CONVERGENCE and WHITE BALANCE, refer to the appended PAL/SECAM-C-870807 adjustment.
 - As to the following items, observe the respective instructions given herein.
- For test points and respective parts setting positions see the "ALIGNMENT LOCATION" of the schematic diagram and the service adjustment in the given herein. See the following procedures for any other SERVICE ADJUSTMENTS.
 - set the user control VRs to central position.

■ ALIGNMENT LOCATION



■ ADJUSTMENT OF B1 POWER SUPPLY

1. Input all-black signal.
 2. Adjust the B1 adjustment VR (R9920) for setting the DC voltage between the TP-91 and TP-E (∇) to 110V.
- * Use a highly accurate tester (internal resistance 20k Ω /V) for adjustment.

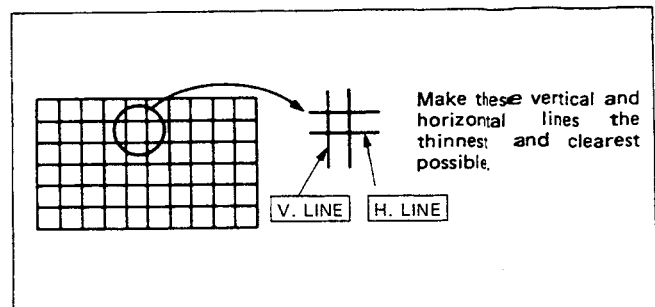
■ ADJUSTMENT OF HORIZONTAL SYNCHRONIZATION

1. Connect the TP-33A to the TP-E by a jumper wire.
2. Adjust the H. HOLD VR (R1503) so that the picture will stop without moving right and left on the screen.
- * Check to see if it is located at the center point where the picture moves right and left.
3. Remove the connected jumper wire.

■ FOCUS ADJUSTMENT

- * Set the B1 voltage before adjusting the focus.
1. Input the cross hatch pattern.

2. Adjust the FOCUS VR knob so that the vertical and horizontal lines in the following Figure in cross hatch pattern become thin and clear.

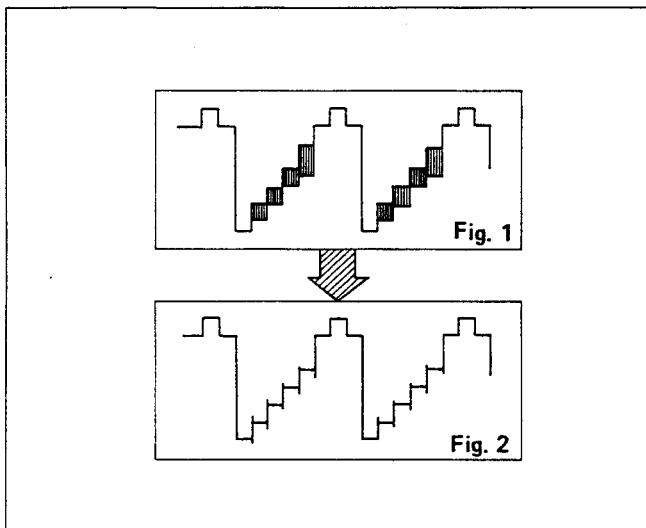


Note: Always perform the main adjustment (final adjustment) of convergence after adjusting the focus. Note that the convergence changes depending on the adjustment of focus.

■ NOTCH CIRCUIT ADJUSTMENT

* Contrast adjustment should have been completed.

1. Input the colour bar signals.
2. Connect the oscilloscope (via probe) to TP-65 (Y-signal).
3. Turn the NOTCH F1, 2 (C614, C659) and adjust the state shown in Fig. 1 to that shown in Fig. 2 in the accompanying diagrams (elimination of chroma components).



Note: Display an equivalent of 2H on the oscilloscope and adjust so that the chroma components will become minimum on the average.

■ ADJUSTMENT OF COLOUR SYNC.

1. Connect pin ⑬ of IC6603 to line B2 via the 10 Kohm resistor.
2. Shortcircuit pin ⑭ of IC6603 and GND (⏏) with the jumper wire.
3. Input the colour bars (PAL).
4. While looking at the colour bars on the screen, adjust the OSC ADJ. (C6635) so that the colour bar is generally stopped (for tuning).
5. Disconnect the 10 Ω resistor and jumper wire connected earlier to IC6603's pin ⑬ and pin ⑭.
6. Next connect the oscilloscope to TP-48 and TP-49 via the probe and adjust the oscilloscope's range to the X-Y range.
7. Adjust the LISSAJOUS 1 (LEVEL) VR (R6662) and LISSAJOUS 3 (MAIN). (C6626) to change the waveform from that shown in Fig. 3 to that shown in Fig. 4.
8. If proper adjustment from Fig. 3 to Fig. 4 is impossible, fine-adjust the LISSAJOUS 4 (SUB), LISSAJOUS 2 (SUB) (C6627, C6658) to change the Fig. 3 waveform to that of Fig. 4.

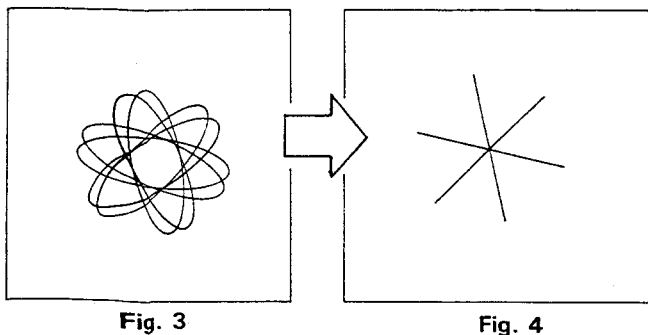


Fig. 3

Fig. 4

■ HORIZONTAL AMPLITUDE AND HORIZONTAL CENTER ADJUSTMENT

1. Input the monochrome-scope pattern to VIDEO A or B terminal.
2. Set the SCAN switch located on the front control panel to the WIDE position and adjust it so that the raster located on the CRT effective panel becomes 95% by the H. WIDTH COIL (L1503). (Fig. 5)
3. Perform the adjustment so that the length from both left and right side of the CRT to the picture terminal becomes 7 mm with the H. WIDTH COIL (L1505) when the SCAN switch is set to the NARROW position as shown in Fig. 6.

Horizontal center adjustment (on NARROW)

4. Adjust the H. CENTER VR (R1535) located on the main printed circuit board so that the screen comes to the center of CRT.
5. Perform adjustment by the H. POSITION VR (R1561) so that the picture is protruded from the raster.

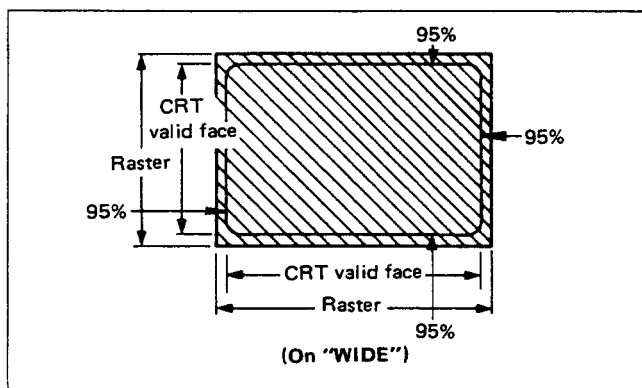


Fig. 5

■ VERTICAL AMPLITUDE, VERTICAL CENTER, AND VERTICAL LINEARITY ADJUSTMENT

1. Input the monochrome-scope pattern to VIDEO A or B terminal.
2. Perform rough adjustment so that the pattern top and bottom face with the V. HEIGHT VR (R1416) when the SCAN switch has been set to the WIDE position.
3. Perform adjustment so that the upper and lower edges of screen reach 95% using the V. HEIGHT VR (R1416) and V. CENTER VR (R1425) as shown in Fig. 5
4. Adjust the upper and lower linearity by rotating the V. LIN VR (R1409).
5. Perform adjustment so that the length from both top and bottom end of the CRT to the pattern top and bottom becomes 5 mm as shown in Fig. 6 using the V. HEIGHT VR (R1417) when the SCAN switch has been set to the NARROW position.

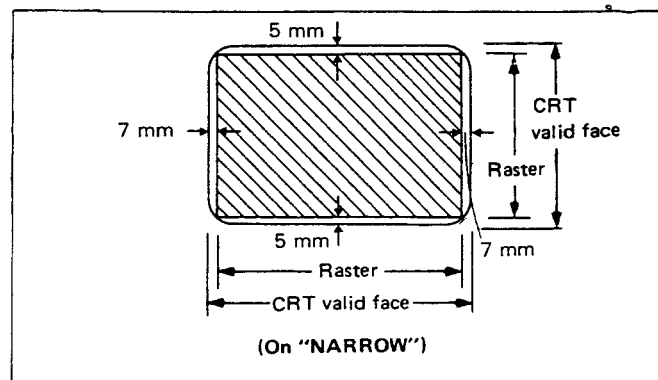


Fig. 6

■ CUT-OFF ADJUSTMENT

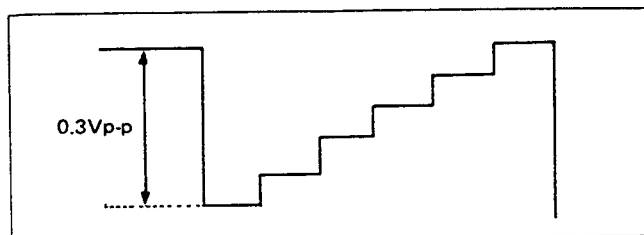
1. Input all-black signal to the VIDEO A or B terminal.
2. Set the SCAN switch to the NORMAL position on the front control panel and rotate the SCREEN VR to reduce value.
3. Set the screen to a single line on the screen by the SETUP SWITCH (S4001) located on the rear control printed circuit board.
4. Connect an oscilloscope between the TP-47R and TP-E (GND) located on the CRT socket printed circuit board.
5. Adjust the black level by the UNDER R. CUT OFF VR (R4136) located on the rear control printed circuit board so that it reaches 140 V.
6. Adjust the UNDER G. CUT OFF VR (R4236) and UNDER B. CUT OFF VR (R4336) so that the voltage at the TP-47G and TP-47B reaches 140 V, respectively as in 5.
7. Turn screen VR from the extreme left to the right and find the first colour that appears.
8. Perform cut-off adjustment by the R. G. CUT OFF VR (R4136 and R4236).
9. Perform fine adjustment to match white colour using the R.G. CUT OFF VR.
(Never use the UNDER B. CUT OFF VR (R4336) in this case.)
10. Set the SCAN switch located on the front control panel to the NARROW position.
11. Perform the adjustments from 2 to 9 using each NARROW CUT OFF VR (R4137, 4237 and 4337).
12. Cancel a single line on the screen by the SETUP switch.

■ CONTRAST ADJUSTMENT (1)

- * Set the INPUT SELECTION switch to the front panel RGB/COMP and rear panel COMPONENT position.

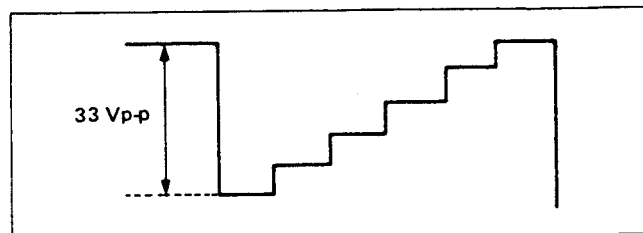
Adjust the decoder printed circuit board.

1. Check to see if each manual VR is set to the detent position or not. If it is not set to the detent position, match it to the detent position.
2. Input component signal (colour bar pattern).
3. Set the COLOUR/MONO switch located on the front control panel to the MONO position.
(At this time, check to see if the screen is set to the gray scale.)
4. Adjust the Y-LEVEL VR (R1029) so that the voltage at TP-Y on the main printed circuit board reaches 0.3 Vp-p.



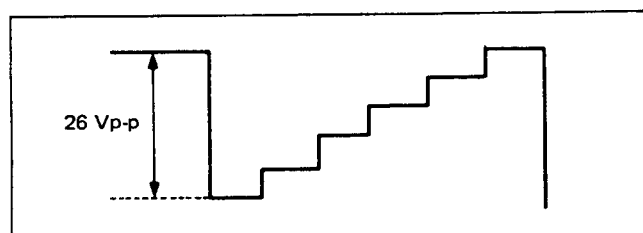
5. Connect an oscilloscope between the TP-47R and TP-E (GND) on the main printed circuit board.
6. Set the R DRIVE VR (R4139) located on the rear control panel to maximum.

7. Perform adjustment using the SUB CONTRAST VR (R4732) on the front control panel so that voltage is equal to 33 V.



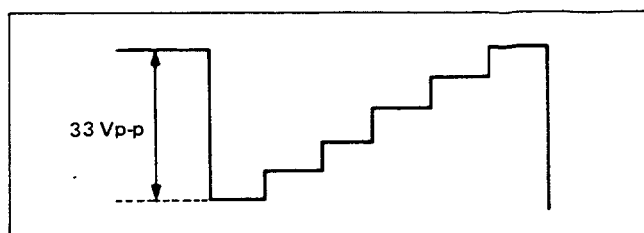
■ CONTRAST ADJUSTMENT (2)

- * Component adjustment should have been completed.
1. Input the colour bar pattern to the VIDEO A or B terminal.
 2. Set the COLOUR/MONO switch located on the front control panel to the MONO position.
(At this time, check to see if the screen is set to the gray scale.)
 3. Connect an oscilloscope between the TP-47R and TP-E (GND) on the main printed circuit board.
 4. Adjust the Y-LEVEL VR (RF6648) so that the oscilloscope indicates 26 Vp-p.



■ CONTRAST ADJUSTMENT (3)

- * Component and composite video adjustments should have been completed.
1. Input the RGB analog signal (colour bar pattern).
 2. Set the COLOUR/MONO switch to the MONO position.
(At this time, check to see if the MONO position to the gray scale.)
 3. Connect an oscilloscope between the TP-47R and TP-E (GND) on the main printed circuit board.
 4. Adjust the RGB SUB CONTRAST VR (R1012) so that the oscilloscope indicates 33 Vp-p.



■ WHITE BALANCE ADJUSTMENT

* Contrast and colour adjustments should have been completed.

1. Input the monoscope pattern signal to the VIDEO A or B terminal.
2. Adjust the G and B DRIVE VR (R4239 and R4339) located on the rear control panel so that the entire screen becomes white.
(At this time, never move the R DRIVE VR (R4139).)

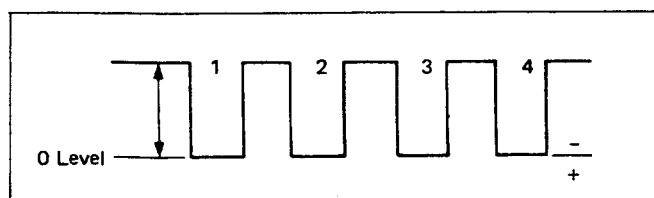
(Reference)

COLOUR TEMPERATURE
D6500°K
$x = 0.313$
$y = 0.329$

■ COLOUR ADJUSTMENT (1)

* Contrast adjustment should have been completed.

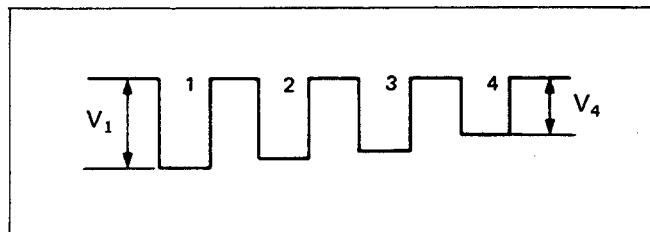
1. Input the component signal (colour bar pattern).
2. Set the INPUT SELECTION switch to the front panel RGB/COMP and rear panel COMPONENT MII.
3. Connect an oscilloscope to the TP-47R and TP-E (GND) on the CRT socket printed circuit board.
4. Alternately adjust the SUB CHROMA VR, SUB PHASE VR (R4713 and R4708) on the front panel control printed circuit board as shown in the following figure.
5. Set the first waveform to 0 level, where the lower and upper parts are + and -, respectively.
6. Perform setting so that all of 1, 2, 3 and 4 in the following figure make a straight line.



CHROMA ADJUSTMENT (MII)

Check to the contrast level.

7. Adjust the contrast level again if it is improper. (Contrast adjustment (1))
8. Set the INPUT SELECTION switch (rear panel) to the BETACAM position.
Set the fourth level to the 75% of V_1 by the BETA LEVEL VR (R1085) as shown in the following figure.
9. Set the INPUT SELECTION switch (rear panel) to the MII position.

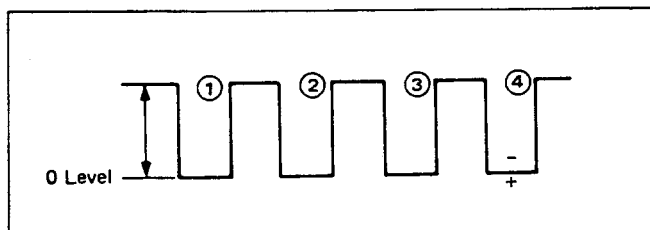


CHROMA ADJUSTMENT (BETACAM)

■ COLOUR ADJUSTMENT (2)

* Component colour adjustment should have been completed.

1. Input the colour bar pattern to the VIDEO A or B terminal.
2. Set the COLOUR/MONO switch located on the front control panel to the COLOUR position.
(At this time, check to see if the screen is in the colour).
3. Connect an oscilloscope between the TP-47B and TP-E (GND) on the CRT socket printed circuit board.
4. Alternately adjust the SUB CHROMA VR (R6658) on the decoder printed circuit board as shown in the following figure.
5. Set the first waveform to 0 level, where the lower and upper parts are + and -, respectively. Perform setting so that all of 1, 2, 3 and 4 in the following figure make a straight line.

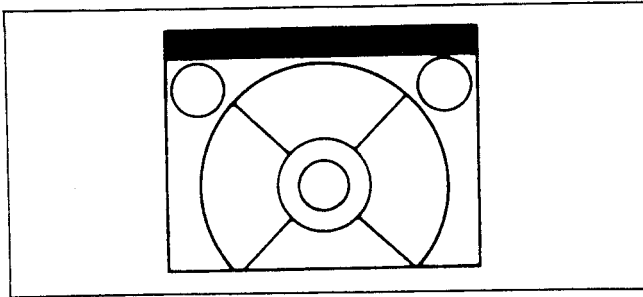


■ PULSE CROSS ADJUSTMENT

1. Input the monoscope pattern to the VIDEO A or B terminal.
2. Turn on the PULSE CROSS switch located on the front panel control.
3. Rotate the PULSE CROSS VR (R6833) on the pulse cross printed circuit board so that the brightness does not change during vertical blanking period.
4. Turn off the PULSE CROSS switch.

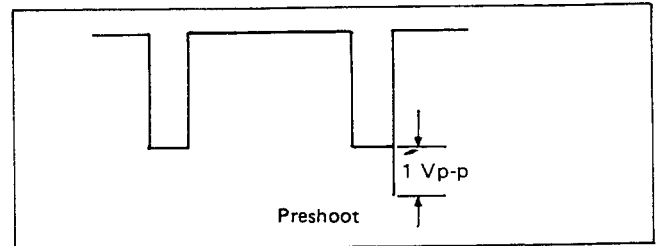
■ BRIGHTNESS ADJUSTMENT

- * Contrast and colour adjustments should have been completed.
- 1. Set the BRIGHT VR to the detent position.
- 2. Input the monoscope signal to the VIDEO A or B terminal.
- 3. Rotate the V HOLD VR for monitoring the vertical fly-back period.
- 4. Rotate the SUB BRIGHT VR (R4728) while monitoring the vertical fly-back period so that the vertical sweep period becomes slightly black (do not make the screen excessively bright).



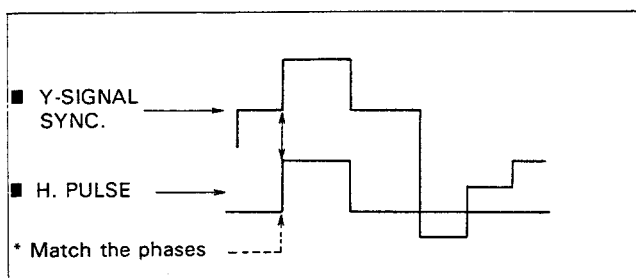
■ APERTURE ADJUSTMENT (PICTURE QUALITY COMPENSATION)

- * Brightness and contrast adjustments should have been completed.
- 1. Set each manual VR to the detent position.
- 2. Input the monoscope pattern to the VIDEO A or B terminal.
- 3. Connect an oscilloscope between the TP-47R and TP-E (GND) located on the CRT socket printed circuit board.
- 4. Adjust the preshoot amount of signal waveform by the SUBAPERTURE VR (R4718) on the front panel control as shown in following figure.

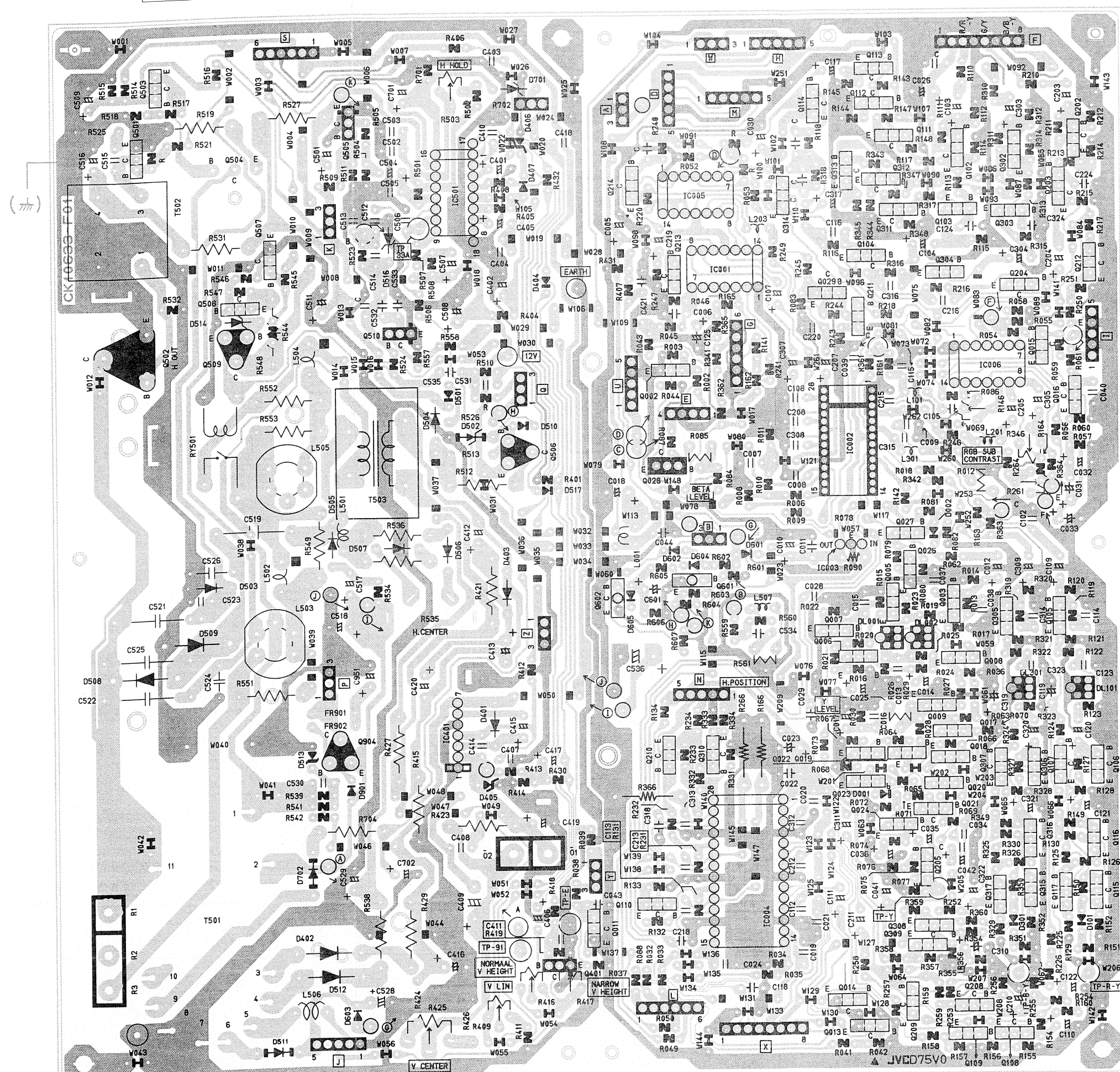


■ H. PULSE ADJUSTMENT

- * H. POSI should have been adjusted.
- 1. Input the colour bar patterns.
- 2. Connect the oscilloscope's X-in and Y-in to the set's TP-65 (Y-signal) and TP-70 (H. pulse), connect the oscilloscope to phenomenon 2 and magnify the synchronous parts.
- 3. Adjust the NORMAL H PULSE PHASE (C6645) so that the rise-up parts of the Y-signal and H. pulse would become congruous.



- 4. Depress the pulse cross switch provided on the front control panel and, if there is any phase mismatching in the waveforms shown in the diagram above, fine-adjust the PULSE CROSS H PULSE PHASE VR (R6683) so that the H. pulse will not lie on the Y-signal sync.'s left (advanced phase) side.



BASING OF TRANSISTOR & IC



2SA1015(O, Y)-Y
2SC1815(O, Y)-Y
2SC1890A(E, F)
2SC1627A
2SC1685
2SC1959(Y)-Y

2SC1360

2SC2068

2SD982
2SD1133(C, D, L)

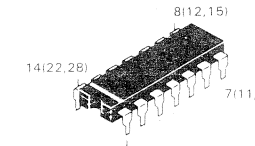
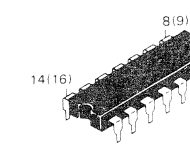


2SD1426

2SD1409

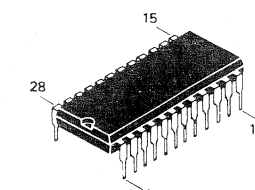
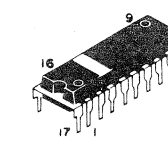
2SC3461

2SD637(Q, R)



TC4538BP
TC4066BP
TC4053BP

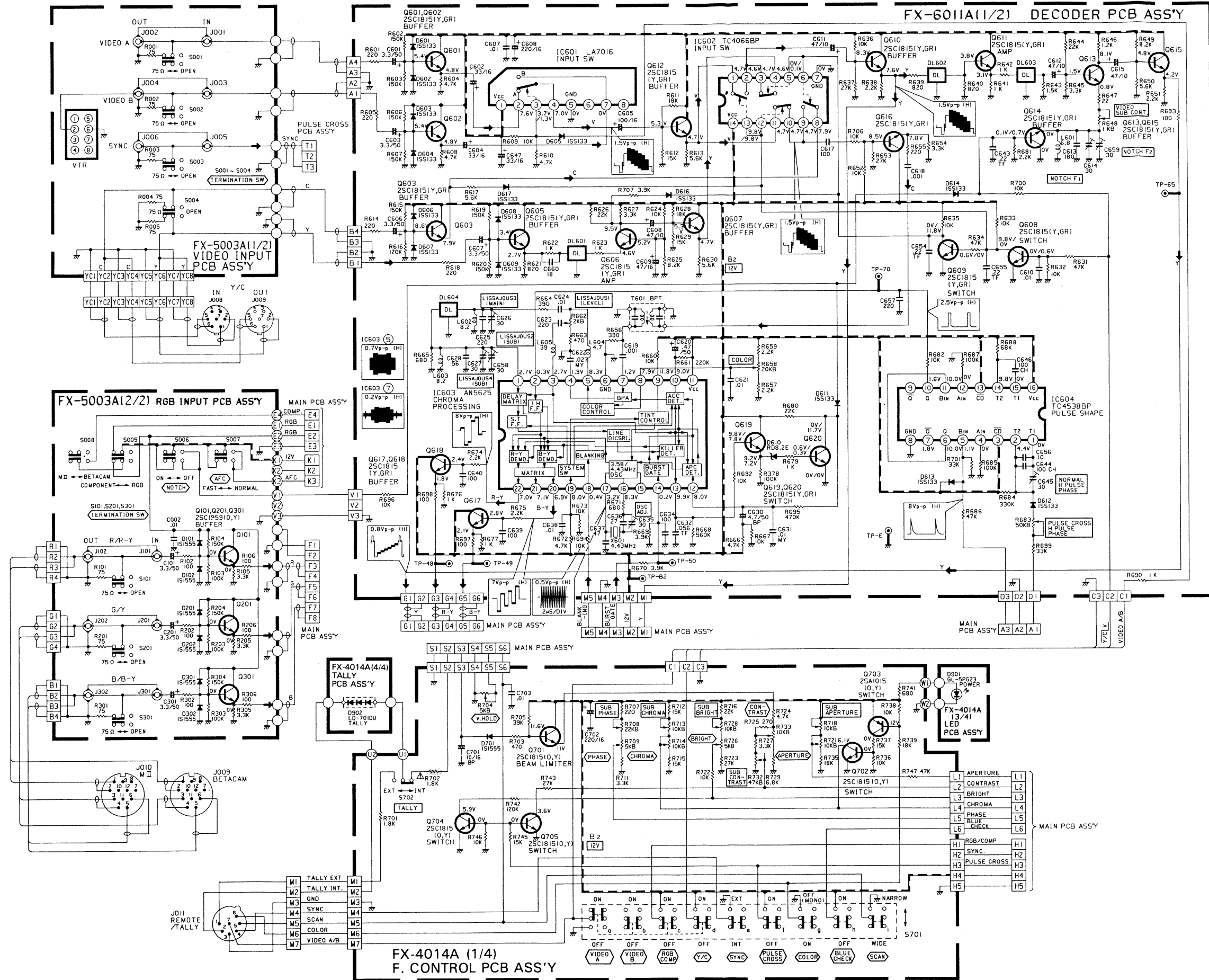
IC
AN5860
AN5867K
AN5625



IC
HA11423

IC
M51493P

DECODER/CONTROL SCHEMATIC DIAGRAM



SAFETY PRECAUTION

- The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
- Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
- Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (Δ) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may create shock, fire, or other hazards.
- Don't short between the LIVE side ground and NEUTRAL side grounding or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE ($\perp$) side GND, the NEUTRAL (///) side GND and EARTH ($\oplus$) side GND. Don't short between the LIVE side GND and NEUTRAL side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND or EARTH side GND at the same time.
If above note will not be kept, a fuse or any parts will be broken.
- If any repair has been made to the chassis, it is recommended that the B₁ setting should be checked or adjusted (See ADJUSTMENT OF B₁ POWER SUPPLY).
- The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
- Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10k Ω 2W resistor to the anode button.
- When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
- Isolation Check**
(Safety for Electrical Shock Hazard)
After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) Dielectric Strength Test

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3,000V AC (r.m.s.) for a period of one second. Withstand a voltage of 1,100V AC (r.m.s.) to an appliance rated up to 120V, and 3,000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.

This method of test requires a test equipment not generally found in the service trade.

(2) Leakage Current Check

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

• Alternate Check Method

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500 Ω 10W resistor paralleled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter.

Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).

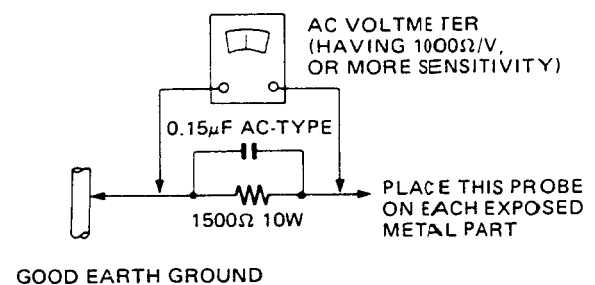


Fig. A

PURITY, CONVERGENCE AND WHITE BALANCE

* The locations of SERVICE SWITCH, SCREEN VR, CUT-OFF VR and DRIVE VR are described in the ALIGNMENT LOCATION of SERVICE ADJUSTMENT or the SCHEMATIC DIAGRAM.

PICTURE TUBE

The picture tube is a precision in-line gun type. For this picture tube, dynamic convergence is carried out by a precision deflection yoke which eliminated the use of convergence yoke and convergence circuit. The adjustment of picture tube is therefore made easier as only the adjustment of static convergence by using a magnetic is enough. The deflection yoke and purity/convergence magnets assembly has been set at the factory and requires no field adjustments.

However, should the assembly be accidentally jarred or tampered with, some or all adjustments may be necessary.

COLOR PURITY & VERTICAL CENTER

Loosen yoke retaining screw (Fig. B-1). With a sharp knife cut between the picture tube and the wedge. Remove wedges completely and clean off dried adhesive from the picture tube. PAINT is used to lock the tabs of the purity/convergence magnet assembly in place (Fig. B-1). The paint must be removed with the end of a screwdriver before any adjustments are attempted.

(As to models equipped with a magnet locking ring, beforehand loosen it.)

1. Select no signal UHF channel. (or Display a monochrome pattern)
2. Let the purity tabs come in line horizontally as is shown in Fig. B-2. A long tab should be in the same direction as the other short tab.
3. Move the yoke slowly backward.
4. Turn the GREEN CUT-OFF VR to maximum and the RED and BLUE CUT-OFF VRs to minimum. Then adjust the SCREEN VR so that the green band can be seen best. (Fig. B-3.)
5. Rotate the two tabs in the opposite directions and with them kept at an angle, together in either direction so that the green band is centered on the picture tube.
6. Check the vertical center position by displaying a horizontal line. (Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.) Unless correct, bring it to the nearest center by rotating the two tabs, kept at an angle, together in either direction. (Fig. B-4)
7. Repeat steps 5 and 6 alternately until the green band and the vertical center come to the center.
8. Move the yoke slowly towards the bell of the tube so that the whole surface of the picture tube is filled with a green pure raster.
9. Turning RED or BLUE CUT-OFF VR to maximum and GREEN CUT-OFF VR to minimum, make sure of a red or blue pure raster.
10. Secure yoke retaining screw (do not install wedges at this time).

(As to models equipped with a magnet locking ring, secure it and keep six magnets from moving even if it is touched slightly.)

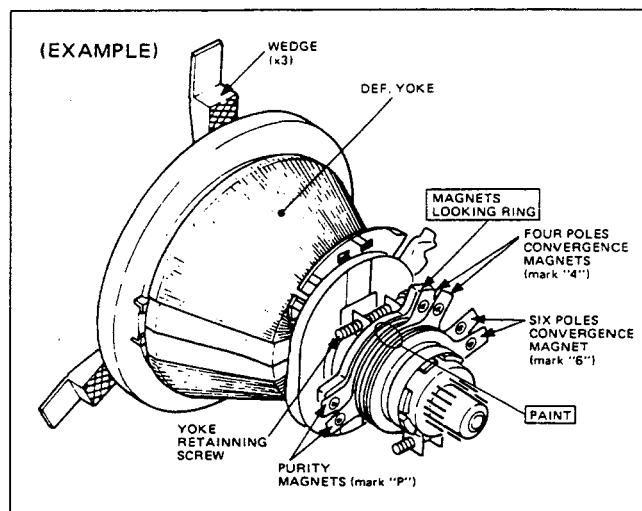


Fig. B-1

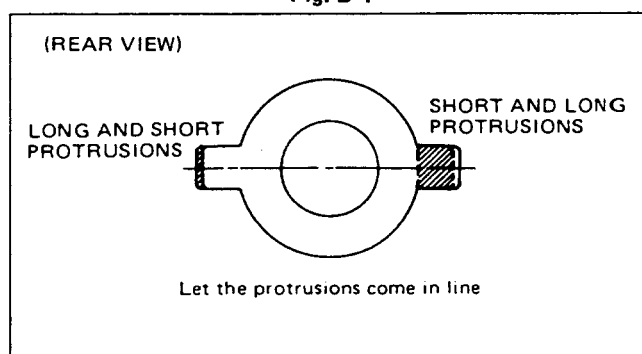


Fig. B-2

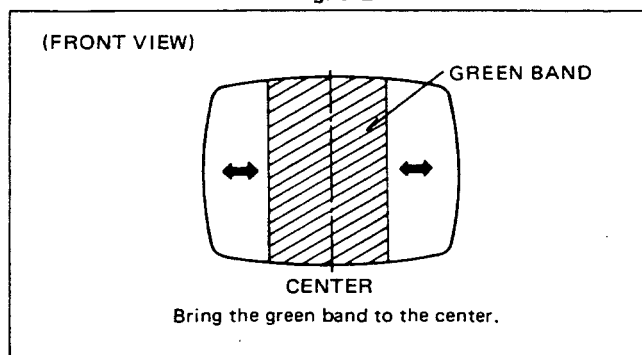


Fig. B-3

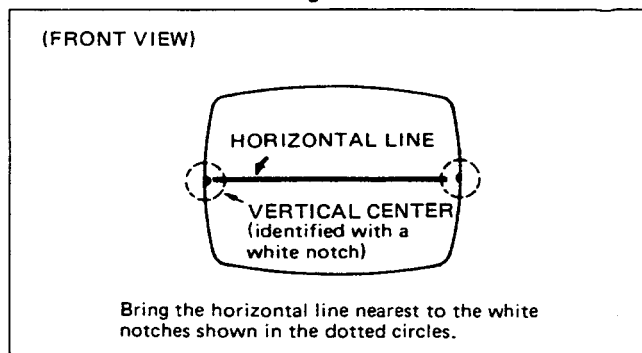


Fig. B-4

STATIC CONVERGENCE & DYNAMIC CONVERGENCE

1. Connect a crosshatch generator to the input terminals and adjust BRIGHTNESS and CONTRAST control for a distinct pattern.
2. Adjust the convergence around the edges of the picture tube by tilting the yoke, up-down and left-right, and temporarily install one wedge at the top of the yoke. (Fig. B-7, 8, 9)
3. Rotate the front pair of tabs (four pole convergence magnet) as a unit to minimize the separation of the red and blue lines around the center of the screen. To adjust the convergence of red and blue, vary the angle between the tabs. (Fig. B-5)
4. Rotate the rear pair of tabs (six pole convergence magnets) as a unit to minimize the separation of the magenta (R/B) and green lines. (Fig. B-6)
5. Adjust the spacing of the rear tabs to converge the magenta and green lines.
6. Apply paint to fix six magnets
As to models equipped with a magnet locking ring, tighten it.
7. Remove the wedge installed temporarily on the yoke.
8. Tilting the angle of the yoke up, down and sideways, and adjust the yoke so as to obtain the circumference convergence. (Fig. B-8, 9)
9. Insert wedges to the position as shown in Fig. B-10 to obtain the best circumference convergence.
10. Wedge has a backing of double sided adhesive tape. Therefore, tear off one side of adhesive tape, and fix the wedges.
11. White balance adjustment (Black & White tracking) can now be performed.

WHITE BALANCE ADJUSTMENT (Black and White Tracking)

1. Display a monochrome pattern.
2. Set the RED and GREEN DRIVE VRs for their mechanical center.
3. Turn the RED, GREEN and BLUE CUT-OFF VRs and the SCREEN VR fully counterclockwise.
4. Display a horizontal line. (Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.)
5. Turn SCREEN VR slowly clockwise until a very faint horizontal line appears.
6. Turn the CUT-OFF VR of the color which has appeared first, clockwise by about 10° and then adjust the SCREEN VR again so that the color may shine faintly.
7. Turn the other color CUT-OFF VRs slowly clockwise until a reasonable white line appears.
8. Return the monochrome pattern. (When returning a monochrome pattern select the CUT-OFF SERVICE SWITCH from S to N and a monochrome pattern will appear.)
9. Adjust the RED and GREEN DRIVE VRs for best white highlights.

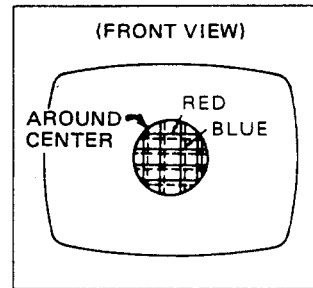


Fig. B-5

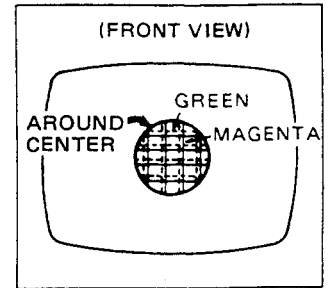


Fig. B-6

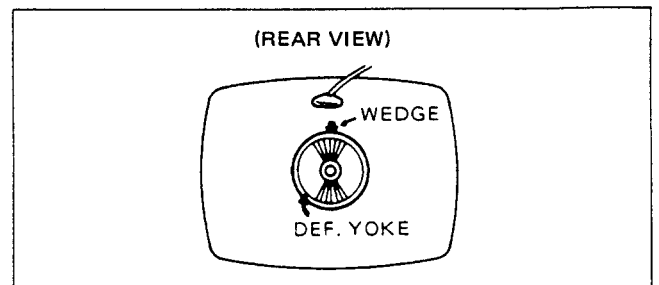


Fig. B-7

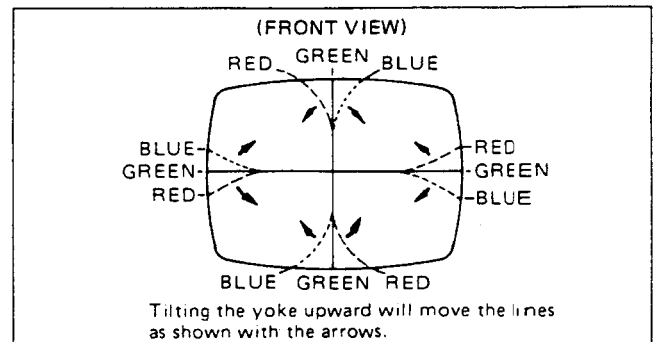


Fig. B-8

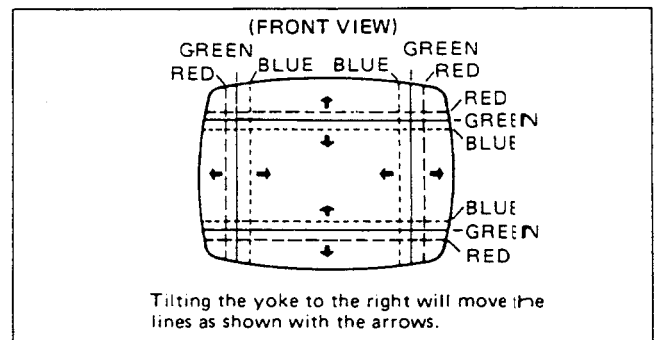


Fig. B-9

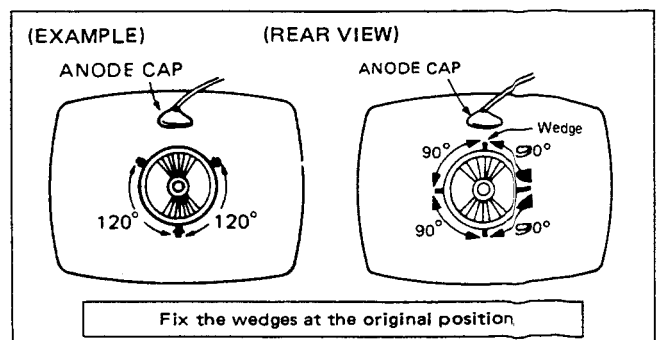


Fig. B-10

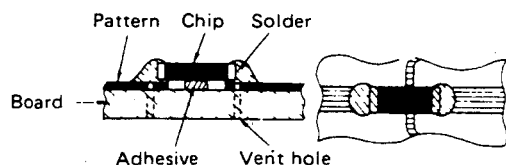
REPLACEMENT OF THE CHIP

* CHIPS ARE NOT USED ON CERTAIN MODELS. REFER TO THE DESCRIPTIONS ON THIS PAGE ONLY WHEN WORKING ON MODELS ON WHICH CHIPS ARE EMPLOYED.

* Replacement of the chip on printed circuit board can be performed easily as follows.

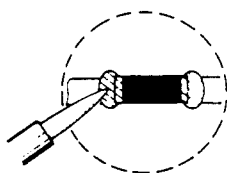
1 When mounted

[Resistor · Capacitor]

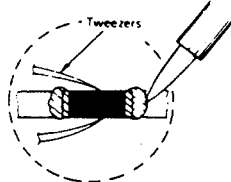


2 Removal of the chip

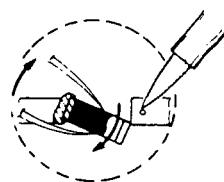
(1) Remove either of the soldered contacts.



(2) Hold the chip with tweezers and remove the other contact.



(3) Work the chip free from the adhesive with tweezers.

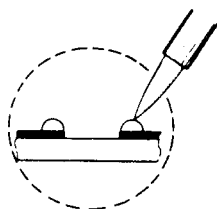


3 Preheating and soldering of chip pieces

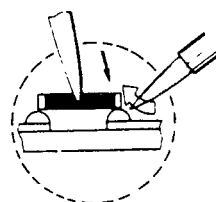
Be sure to preheat chip pieces (except the transistor) especially the capacitor before soldering with hot air, about 150°C (hair dryer or such can be used) for about 2 minutes. Then, immediately solder with an iron of about 30W.

4 Replacing the chip pieces

(1) Apply the solder to the board first.



(2) Hold the chip with tweezers and solder it in place, hold the iron at a 45° angle when soldering.

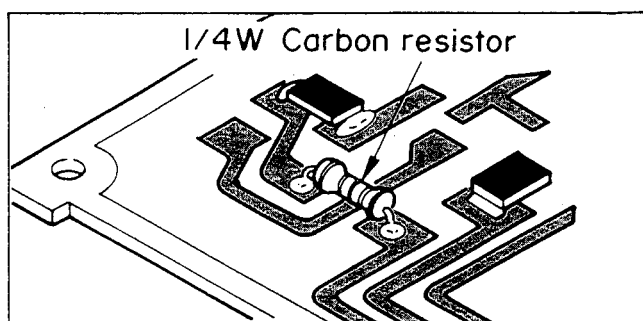


■ Discrete parts can be substitutionally mounted as shown in the figure on the right.

Mounting is also possible by passing the wires from the board front side (parts side) through the chip soldering hole (vent hole of registration part).

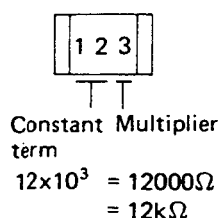
Substitute parts are as follows.

- Chip Metal Glaze Resistor
 - Carbon Resistor 1/4W ±5%
- Chip Ceramic Capacitor
 - Ceramic Capacitor 50V ±5%

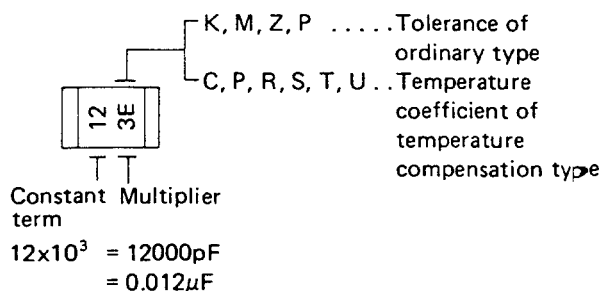


■ Decoding of chip parts constant terms

< Chip Metal Glaze Resistor >



< Chip Ceramic Capacitor >



SICHERHEITSVORKEHRUNGEN

1. Dieses Fernsehgerät enthält besondere Bauteile, Schaltungen und elektrische Bauteile zur Gewährleistung der Betriebssicherheit. Zur Aufrechterhaltung der Betriebssicherheit dürfen keine Änderungen der Konstruktion ohne schriftliche Zustimmung des Herstellers vorgenommen werden. Ersatzteile müssen genau den ausgetauschten Teilen entsprechen. Service ist nur von qualifizierten Fachleuten vorzunehmen.
2. Konstruktionelle oder schaltungstechnische Änderungen an dem Gerät dürfen nicht vorgenommen werden. Bei Vornahme derartiger Änderungen erlischt die Garantie des Herstellers und der Hersteller ist nicht für dadurch auftretende Verletzungen oder Sachschäden verantwortlich.
3. Viele elektrische und mechanische Bauteile dieses Gerätes besitzen besondere sicherheitstechnische Eigenschaften. Diese Eigenschaften sind in vielen Fällen nicht visuell wahrnehmbar und die Schutzeigenschaften werden nicht notwendigerweise bei Austausch mit Bauteilen für höhere Spannung, Leistung u. dgl. aufrechterhalten. Ersatzteile, welche diese besonderen Schutzeigenschaften besitzen, sind in der Ersatzteilliste besonders gekennzeichnet. Elektrische Bauteile mit solchen Schutzeigenschaften sind durch Schraffierung in den schematischen Darstellungen und durch das Zeichen (Δ) in der Ersatzteilliste des Service-Handbuches erkenntlich. Die Verwendung von Ersatzteilen, welche nicht die gleichen Schutzeigenschaften wie die empfohlenen Ersatzteile haben, kann zu elektrischen Schlägen, Feuer oder anderen Gefahren führen.
4. Bei der Reparatur niemals die unter Spannung stehende Seite oder die neutrale Erdung mit der Masseseite (Erdung) des Gerätes kurzschließen.
Die Stromversorgungsnetze mancher Modelle unterscheiden sich im Masseanschluß (Erdung). Die Masseanschlüsse (Erdung) an der spannungsführenden Seite LIVE ($\perp$) GND, der neutralen Seite NEUTRAL ($\perp$) GND und dem Masseanschluß EARTH ($\oplus$) GND unterscheiden sich etwas bei den verschiedenen Modellen. Niemals die LIVE GND Seite und die NEUTRAL GND Seite oder EARTH GND Seite kurzschließen und die Messung niemals mit einem Meßgerät (Oszilloskop usw.) gleichzeitig an der LIVE GND SEITE und der NEUTRAL GND oder EARTH GND Seite vornehmen.
Falls die obigen Anweisungen nicht beachtet werden, können die Sicherung oder andere Teile durchbrennen.
5. Falls Reparaturen an einem Chassis ausgeführt wurden, dann sollte die B₁ Einstellung kontrolliert und ggf. eingestellt werden (siehe unter "Einstellung der B₁ Stromversorgung").
6. Die für die Bildröhre bestimmte Hochspannung, muß der im Service-Handbuch festgelegten Hochspannung entsprechen. Übergroße Hochspannung kann zu Röntgenstrahlenemission, Funkenbogen und möglicherweise Beschädigung von Bauteilen führen. Aus diesem Grund ist Betrieb unter übergroßer Hochspannung auf das Minimum zu beschränken oder gänzlich zu verhindern. Bei Auftreten von starker Lichtbogenbildung ist die Wechselstromversorgung sofort abzuschalten und die Ursache durch visuelle Inspektion festzustellen (unrichtiger Einbau, Risse oder Schmelzen der Hochspannungsisolations, schlechte Lötverbindungen, usw.). Zur Aufrechterhaltung des richtigen Minimumpegels weicher Röntgenstrahlenemission, müssen die Hochspannungsbauteile einschließlich der Bildröhre durch genau die gleichen Teile oder durch vom Hersteller des Fernsehgerätes zugelassene Alternativteile ausgetauscht werden.
7. Prüfen Sie die Hochspannung nicht durch Ziehen eines Lichtbogens. Verwenden Sie ein Hochspannungsmeßgerät oder eine Hochspannungssonde mit Röhrenvoltmeter. Entladen Sie die Bildröhre durch Anschluß einer Klemmenleitung an die Erde und durch einen 10 kOhm, 2 W Widerstand an der Anodenknopf, bevor Sie das Meßgerät anschließen.
8. Wenn Service erforderlich ist, muß die ursprüngliche Leitungslänge eingehalten werden. Besonders im Hochspannungsteil muß auf richtige Leitungslänge geachtet werden. Verwenden Sie immer die vom Hersteller empfohlenen Ersatzteile.

9. Isolationsprüfung (Berührungsschutz)

Nach dem Zusammenbau des Gerätes ist eine Isolationsprüfung an den blanken freiliegenden Metallteilen des Gehäuses (Antennenklemmen, Video/Audio-Ein- und Ausgänge, Reglerknöpfe, Schraubenknöpfe, Ohrhörerbuchse, Bedienelementwellen usw.) vorzunehmen, damit sichergestellt ist, daß das Gerät ohne Gefahr von elektrischen Schäden betrieben werden kann.

(1) Prüfung der dielektrischen Durchschlagfestigkeit

Die Isolation zwischen dem Netzteil und die dem Benutzer zugänglichen Metallteile, insbesondere freiliegende Metallteile mit Rückleitung zum Chassis, sollte einer Wechselstromspannung (Effektivspannung) von 3000 V für die Dauer einer Sekunde widerstehen.

..... einer Wechselstromspannung von 1100 V (Effektivspannung) bei einem für 120 V ausgelegtem Gerät und einer Wechselstromspannung von 3000 V (Effektivspannung) bei einem für 200 V oder mehr ausgelegtem Gerät für die Dauer einer Sekunde widerstehen.

Diese Prüfung erfordert Prüfeinrichtungen, die nicht in jedem Servicebetrieb zu finden sind.

(2) Kriechstromprüfung

Stecken Sie das Netzkabel direkt in eine Steckdose (verwenden Sie keinen Leitungsisolationsrafo während dieser Prüfung). Messen Sie mit einem Kriechstrom-Meßgerät den Kriechstrom von jedem freiliegenden Metallteil des Gehäuses, besonders von Metallteilen, welche eine Rückleitung zum Chassis haben, zu einer guten Erdung (Wasserrohr usw.). Evtl. Kriechstrom darf 0,5 mA nicht überschreiten.

• Alternative Prüfmethode

Stecken Sie das Netzkabel direkt in eine Steckdose (verwenden Sie keinen Leitungsisolationsrafo während dieser Prüfung). Verwenden Sie ein Wechselstrom-Voltmeter mit 1000 Ohm pro Volt oder besserer Empfindlichkeit auf folgende Weise. Schließen Sie einen 1500 Ohm, 10 W Widerstand mit einem parallelen 0,15 µF Wechselstrom-Kondensator zwischen einem freiliegenden Metallteil und guter Erdung (Wasserrohr usw.) an.

Messen Sie die Wechselstromspannung über den Widerstand mit einem Wechselstrom-Voltmeter.

Legen Sie den Widerstandsanschluß an jedes freiliegende Metallteil mit Rückleitung zum Chassis an und messen Sie die Wechselstromspannung über den Widerstand. Drehen Sie nun den Stecker in der Wechselstromsteckdose und wiederholen Sie jede Messung. Die gemessenen Spannungen dürfen nicht 0,35 V Wechselstrom (Effektivspannung) übersteigen. Dies entspricht 0,5 mA Wechselstrom (Effektivspannung).

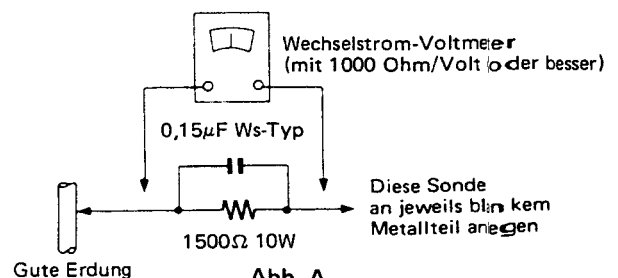


Abb. A

REINHEIT, KONVERGENZ UND WEISSBALANCE

*Die Anordnung der Wartungsschalter (SERVICE SWITCH), Bildregler (SCREEN VR), Begrenzungsregler (CUT-OFF VR) und Ansteuerregler (DRIVE VR) sind in dem Abschnitt "Anordnung der Abgleichteile" im Kapitel "Service-Einstellungen" der Schaltpläne beschrieben.

BILDRÖHRE

Bei dieser Bildröhre handelt es sich um eine in-Line Kanonentyp-Bildröhre. Bei dieser Bildröhre wird die dynamische Konvergenz durch ein Präzisionsablenkjoche durchgeführt, so daß ein Konvergenzjoch und eine Konvergenzschaltung überflüssig sind. Das Abgleichen der Bildröhre ist daher einfacher, weil das Abgleichen der statischen Konvergenz mit einem Magneten ausreicht.

Das Ablenkjoch und die Reinheits/Konvergenzmagneten sind werkseitig eingestellt und bedürfen keiner weiteren Nachjustierung.

Wenn die Einheit aber starken Erschütterungen ausgesetzt wird, sind einige oder alle Einstellungen vorzunehmen.

FARBREINHEIT & VERTIKALMITTE

Lösen Sie die Jochhalteschraube (Abb. B-1) und führen Sie ein scharfes Messer zwischen Bildröhre und Keil ein.

Entfernen Sie die Keile vollständig und reinigen Sie die Bildröhre von dem angetrockneten Kleber. Die Zungen der Reinheits/Konvergenzmagneteinheit werden durch Farbe befestigt (Abb. B-1). Die Farbe muß mit einer Schraubenzieherspitze entfernt werden, bevor Abgleichen möglich ist.

(Mit Magnetarretierring versehenen Modellen, diese zuerst lösen.)

1. Wählen Sie einen nicht belegten UHF-Kanal. (Oder ein Schwarzweiß-Testbild anzeigen.)
 2. Richten Sie die Reinheitszungen horizontal aus, wie in Abb. B-2 gezeigt. Dabei sollte die lange Zunge in die gleiche Richtung wie die kurze Zunge zeigen.
 3. Bewegen Sie das Joch langsam nach hinten.
 4. Drehen Sie den Grün-Begrenzungsregler auf Maximum und die Rot- und Blau- Begrenzungsregler auf Minimum. Stellen Sie den Bildregler dann so ein, daß das grüne Band am besten gesehen werden kann. (Abb. B-3)
 5. Drehen Sie die beiden Zungen in die entgegengesetzte Richtung und dann zusammen in eine der beiden Richtungen, wobei die Zungen im Winkel zu einander stehen, so daß das grüne Band in der Mitte der Bildröhre zu stehen kommt.
 6. Prüfen Sie die Vertikalmittenposition durch Anzeige einer horizontalen Linie. (Den Begrenzungs-Service-Schalter von N auf S umschalten, wodurch eine horizontale Linie erscheinen sollte.) Ist dies nicht der Fall, bringen Sie die horizontale Linie in die nächste Mitte, indem Sie die beiden Laschen zusammen unter Beibehaltung des Winkels, in die eine oder andere Richtung drehen. (Abb. B-4).
 7. Wiederholen Sie die Schritte 5 und 6 abwechselnd, bis das grüne Band und die Vertikalmitte auf die Mitte eingestellt sind.
 8. Bewegen Sie das Joch langsam auf die Glocke der Röhre, so daß die ganze Oberfläche der Bildröhre mit einem reinen grünen Raster ausgefüllt ist.
 9. Drehen Sie die Rot- und Blau- Begrenzungsregler auf Maximum und den Grün-Begrenzungsregler auf Minimum, so daß ein rotes oder blaues Raster erscheint.
- B(-G)

10. Sichern Sie die Jochhalteschraube (bringen Sie die Keile noch nicht an).

(Bei Geräten mit Magnetklemmring ist dieser zu fixieren und Bewegung der sechs Magneten auch bei nur leichter Berührung zu verhindern.)

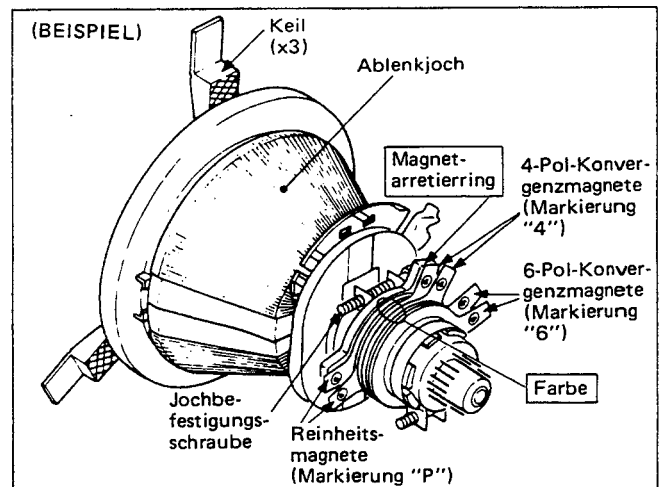


Abb. B-1

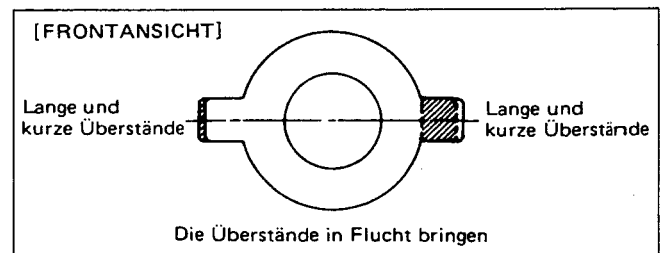


Abb. B-2

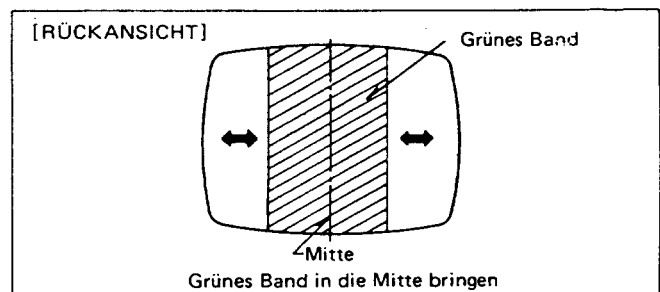


Abb. B-3

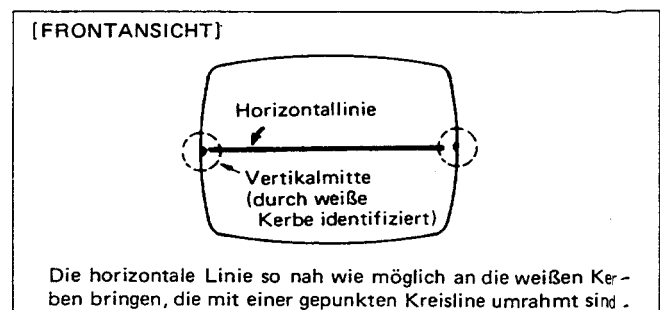


Abb. B-4

STATISCHE KONVERGENZ & DYNAMISCHE KONVERGENZ

1. Schließen Sie einen Gittermuster-generator an die Eingangsklemmen und stellen Sie die HELLIGKEITS- und KONTRAST-Regler auf ein deutliches Muster ein.
2. Stellen Sie die Konvergenz am Rand der Bildröhre durch Neigen des Jochs nach oben/unten und rechts/links ein und setzen Sie provisorisch einen Keil an der Oberseite des Jochs ein. (Abb. B-7, 8, 9)
3. Drehen Sie das vordere Paar der Zungen (4-Pol-Konvergenzmagnete) als eine Einheit, um die Trennung der roten und blauen Linien in der Mitte des Bildschirms auf das Minimum zu bringen. Durch Änderung des Winkels zwischen den Zungen kann die Konvergenz von rot und blau eingestellt werden. (Abb. B-5)
4. Drehen Sie das hintere Paar der Zungen (6-Pol-Konvergenzmagnete) als eine Einheit, um die Trennung der magentaroten (R/B) und grünen Linien (Abb. B-6) auf das Minimum zu bringen.
5. Verändern Sie den Abstand der hinteren Zungen, damit die magentaroten und grünen Linien zusammenlaufen.
6. Fixieren Sie die sechs Magnete mit Farbe.
(Ist das Modell mit Magnetarretierring ausgerüstet, diesen festziehen.)
7. Entfernen Sie den provisorisch angebrachten Keil vom Joch.
8. Neigen Sie das Joch nach oben und unten sowie nach der Seite, um Umfangskonvergenz zu erzielen (Abb. B-8, 9)
9. Setzen Sie die Keile wie in Abb. B-10 gezeigt ein, um beste Umfangskonvergenz zu erzielen.
10. Die Keile sind mit Doppelklebeband versehen. Ziehen Sie den Schutzstreifen vom Klebeband ab und bringen Sie die Keile an.
11. Weißbalance-Einstellung (Schwarz und Weiß-Hellsteuerung) ist nunmehr möglich.

WEISSBALANCE-ABGLEICH (SCHWARZ UND WEISS-HELLSTEUERUNG)

1. Ein Monochrom-Testbild anzeigen.
2. Stellen Sie die Rot und Grün-Ansteuerregler auf ihre mechanische Mitte.
3. Drehen Sie die Rot-, Grün- und Blau-Begrenzungsregler sowie den Bildregler ganz gegen den Uhrzeigersinn.
4. Anzeige einer horizontalen Linie. (Den Abgrenzungs-Serviceschalter von N auf S umschalten, wodurch die Horizontallinie angezeigt wird.)
5. Drehen Sie den Bildregler langsam im Uhrzeigersinn, bis eine sehr schwache horizontale Linie erscheint.
6. Drehen Sie den Begrenzungsregler der zuerst erschienenen Farbe etwa 10° im Uhrzeigersinn, bis eine sehr schwache horizontale Linie erscheint, und stellen Sie den Bildregler dann so, daß die Farbe schwach erscheint.
7. Drehen Sie die anderen Farb-Begrenzungsregler langsam im Uhrzeigersinn, bis eine akzeptable weiße Linie erscheint.
8. Schalten Sie auf das Schwarzweiß-Testbild zurück. (Beim Zurückschalten auf des Schwarzweiß-Testbild, schalten Sie den Begrenzungs-Serviceschalter von S auf N um, wodurch ein Schwarzweiß-Testbild angezeigt wird.)
9. Stellen Sie die Rot- und Grünansteuerregler so ein, daß die beste WeißEinstellung erzielt wird.

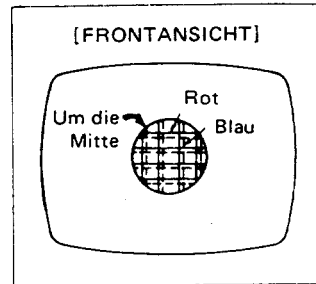


Abb. B-5

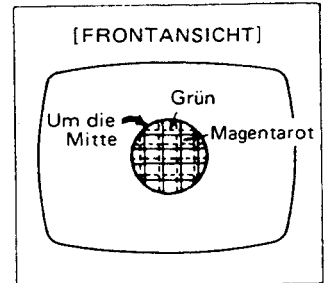


Abb. B-6

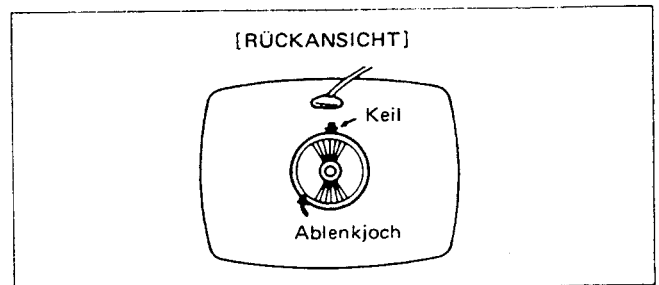


Abb. B-7

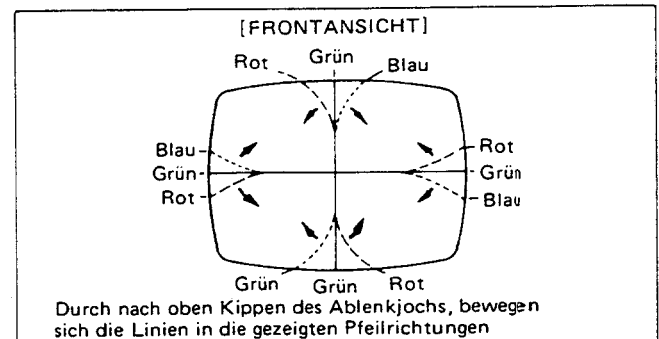


Abb. B-8

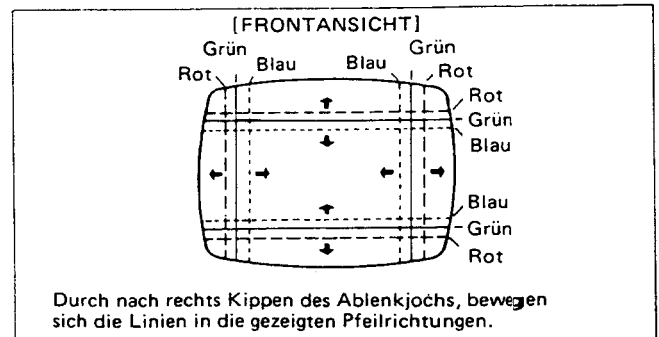


Abb. B-9

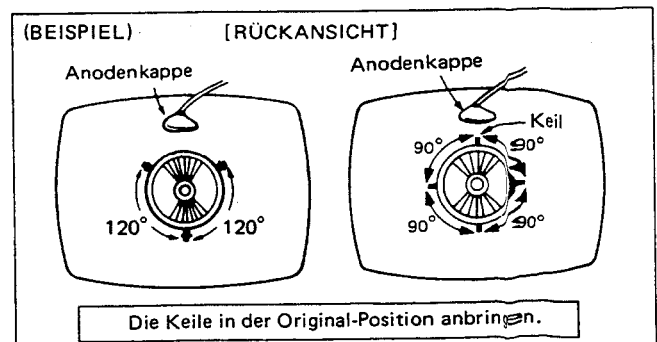


Abb. B-10

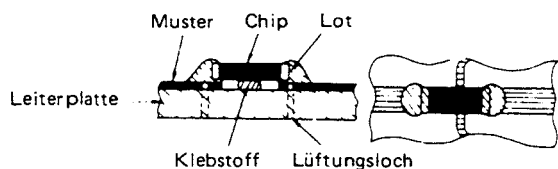
AUSBAU FÜR SERVICE-ARBEITEN

* BEI BESTIMMTEN MODELLEN WERDEN KEINE CHIPS VERWENDET. AUF DIE BESCHREIBUNGEN AUF DIESER SEITE IST NUR DANN BEZUG ZU NEHMEN, WENN AN MIT CHIPS BESTÜCKTEN MODELLEN GEARBEITET WIRD.

* Die Auswechslung des Chips auf einer Leiterplatte kann auf folgende Weise ohne weiteres vorgenommen werden.

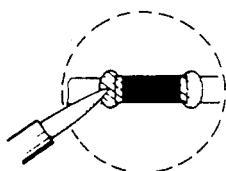
1 Montierter Zustand

(Widerstand . Kondensator)

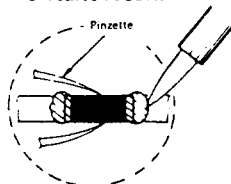


2 Ausbau des Chips

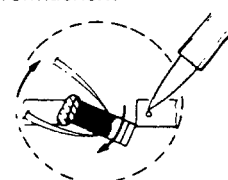
(1) Eines der gelöteten Kontakte lösen.



(2) Den Chip mit einer Pinzette halten und den anderen Kontakt lösen.



(3) Den Chip vom Klebstoff mit Hilfe der Pinzette freimachen.

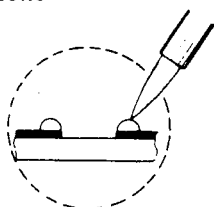


3 Vorwärmen und Löten der Chip-Bestandteile

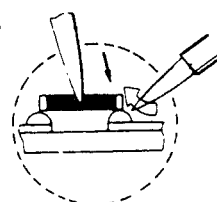
Sichergehen, daß die Chip-Bestandteile (außer dem Transistor), und besonders der Kondensator vor dem Löten mit heißer Luft bei ca. 150°C (ein Haartrockner o.ä. kann verwendet werden) für ungefähr 2 Minuten vorgewärmt wird. Dann sofort mit einem 30W-Löteisen löten.

4 Auswechseln der Chip-Bestandteile

(1) Zuerst Lot auf die Leiterplatte auftragen.



(2) Den Chip mit einer Pinzette halten und an seinen Platz löten; der LötKolben wird dabei bei einem Winkel von 45° gehalten.



■ Gesonderte Teile können ersatzweise montiert werden, wie in der Abbildung rechts gezeigt.

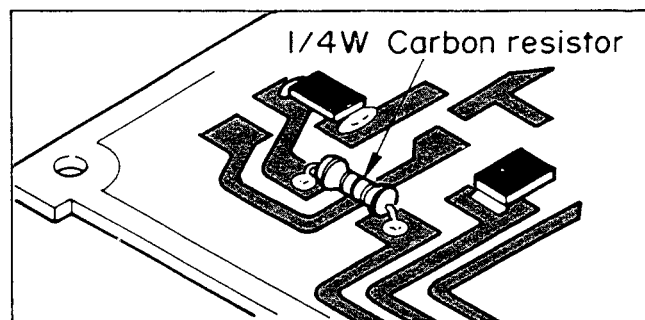
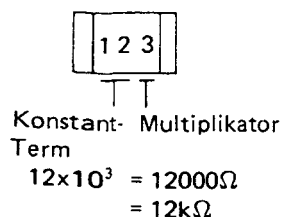
Die Montage kann auch vorgenommen werden, indem die Drähte von der Vorderseite der Leiterplatte durch die Chip-Lötlöcher geführt werden.

Die Ersatzteile sind wie folgt.

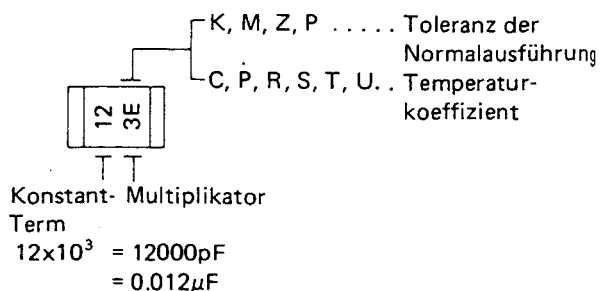
- Chip-Metallglasurschicht-Widerstand
→ Kohlewiderstand 1/4 W ±5%
- Chip-Keramikkondensator
→ Keramikkondensator 50V ±5%

■ Decodieren der Chip-Bestandteil-Konstant-Terme

< Chip-Metallglasurschicht-Widerstand >



< Chip-Keramikkondensator >



JVC VM-R150E SCHEMATIC DIAGRAM

■ NOTICE

- The voltage reading and waveform were measured at each point with a multi-meter and an oscilloscope while receiving a video signal (color bar) through the video input terminal (A) on the monitor.
- The measurements were made with each VR under the condition just after the shipment. The figures of the signal circuits may be more or less different after adjustments, so use the figures simply for reference.

Multimeter used

DC 20k Ω /V

Given figures are all DC voltages.

Sweep speed of oscilloscope

H $\rightarrow$ 20 μ S/div.

V $\rightarrow$ 5 mS/div.

Others $\rightarrow$ sweep speed specified

- Since the schematic diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

■ SAFETY

- FR (FR) denotes a fusible resistor which operates as a fuse. When replacing fusible resistors parts indicated with black shading (FR) in the circuit diagrams, be sure to ensure safety by using designated parts.
- As to other parts too, use designated parts to maintain safety and performance.

■ INDICATING METHOD OF PARTS SYMBOL NUMBERS

- Inside board (Example) FX-1021A: R1209 $\rightarrow$ R209
- Outside board (Example) R0001 $\rightarrow$ R01

■ CIRCUIT DIAGRAM INDICATING METHOD

- Resistor
 - Resistance value
Without unit : Ω K : [k Ω] M : [M Ω]
 - Rated allowable power
Without indication : $\frac{1}{8}$ W & $\frac{1}{4}$ W Others : Indicated

- Type
 - Without indication : Carbon resistor
 - OMR : Oxide metal film resistor
 - UNF : Unflammable resistor
 - CMF, MFR : Coating metal film resistor
 - FR : Fusible resistor

* Composition resistor 1/2 [W] is indicated as 1/2S or Comp.

2. Capacitor

- Capacitance
 - Above 1 [pF] : Below 1 [μ F]
- Withstand voltage
 - Without indication : DC 50 [V]
 - Others : DC withstand voltage [V]
 - AC indicated : AC withstand voltage [V]

- Indications for electrolytic capacitors are as follows. (example) 47/50 $\rightarrow$ capacitance [μ F] / pressure-tightness [V]

3. Type

Without indication : Ceramic capacitor

MY : Mylar capacitor

MM : Metalized mylar capacitor

PP : Polypropylene capacitor

MPP : Metalized polypropylene capacitor

NP : Nonpolar electrolytic capacitor

BP : Bipolar electrolytic capacitor

TAN. : Tantalum capacitor

3. Coil

Without unit : [μ H]

4. Test point & GND symbol

$\odot$: Test point by miniature GT pin,

$\odot$: Only test point is indicated, $\oplus$: EARTH GND,

$\perp$: LIVE GND, --- : NEUTRAL GND

5. Connection method

$\square$: Connector, $\rightarrow$: Receptacle

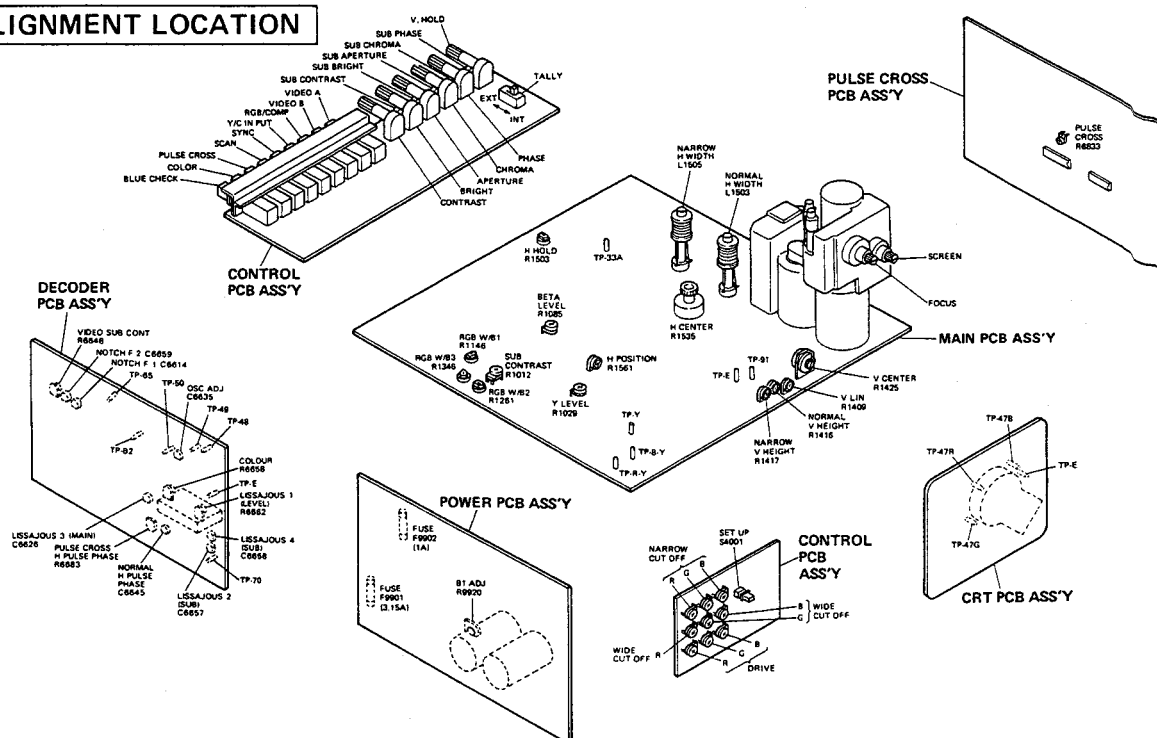
$\circ$: Wrapping or soldering

6. Power Supply (Each voltage reading specified.)

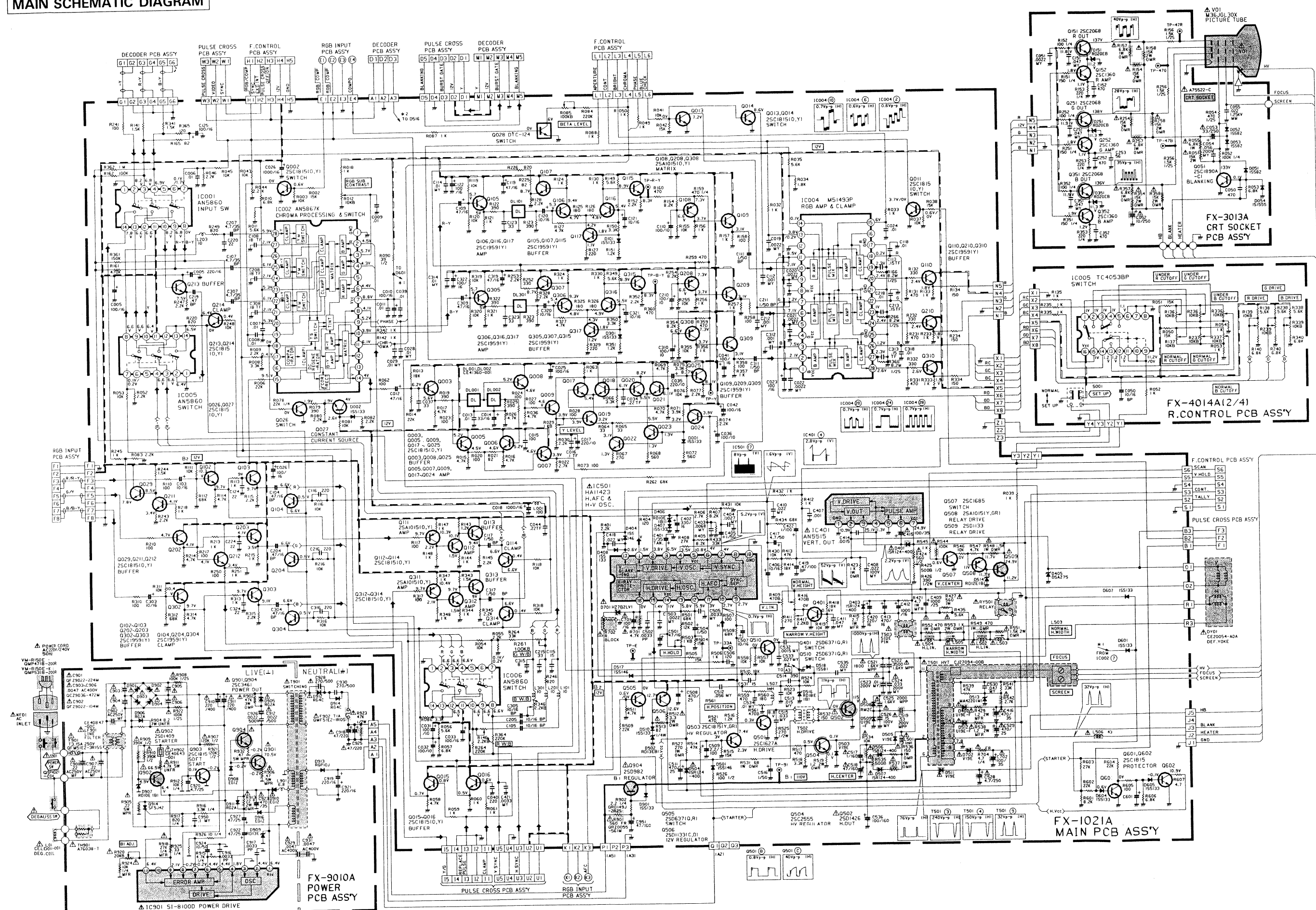
--- : B₁ Voltage (110V) --- : B₂ LINE (12 V)

--- : 12 V LINE

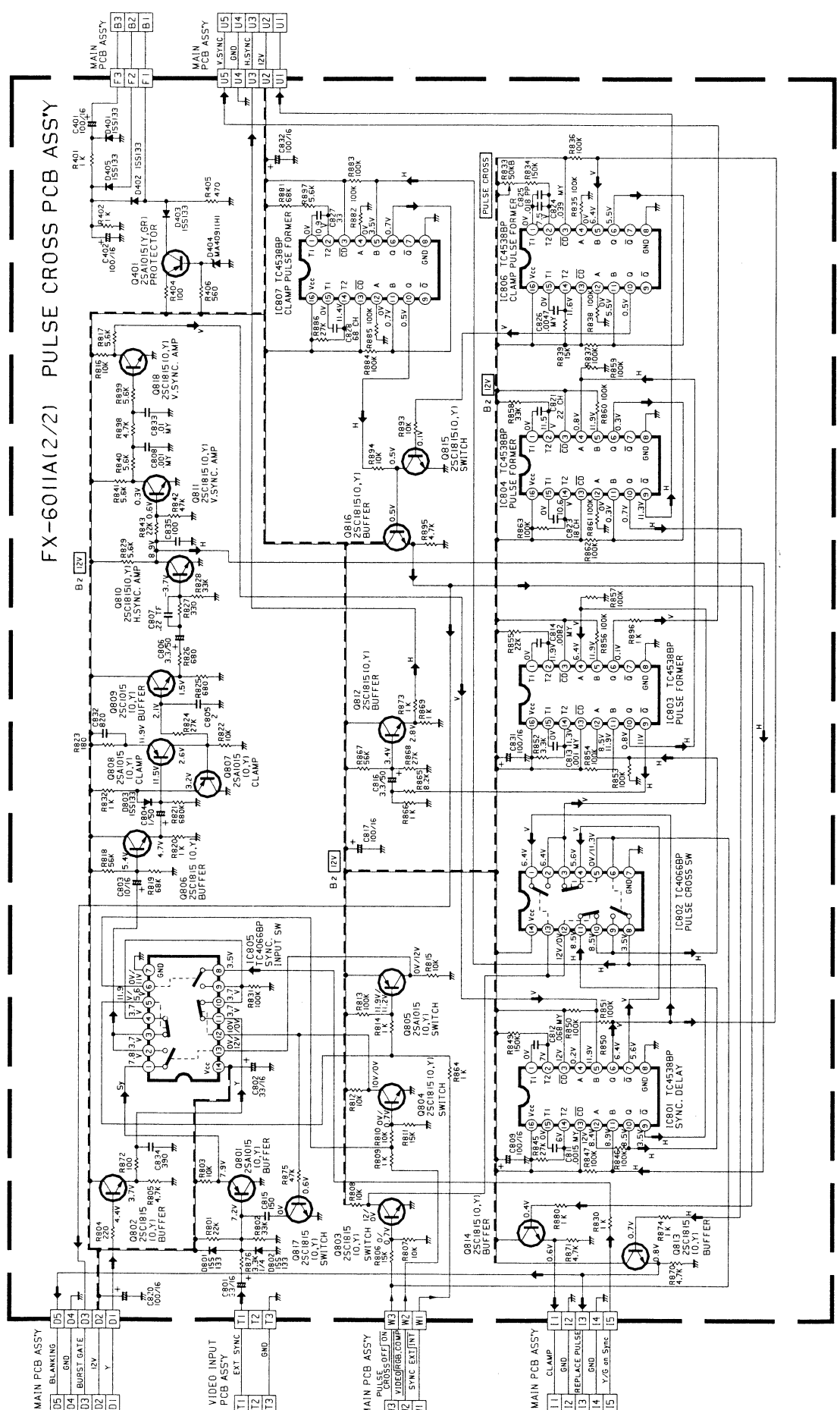
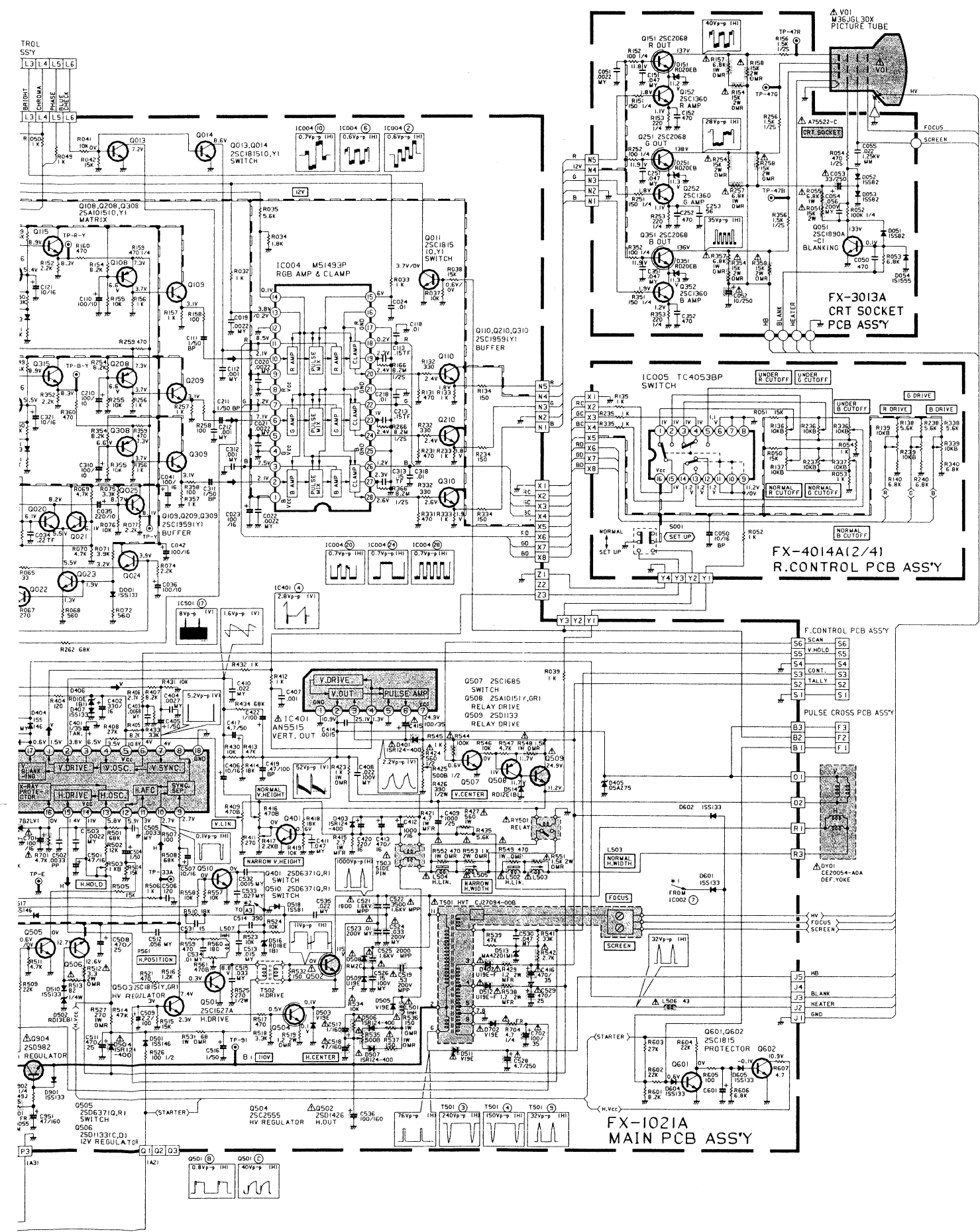
ALIGNMENT LOCATION



MAIN SCHEMATIC DIAGRAM

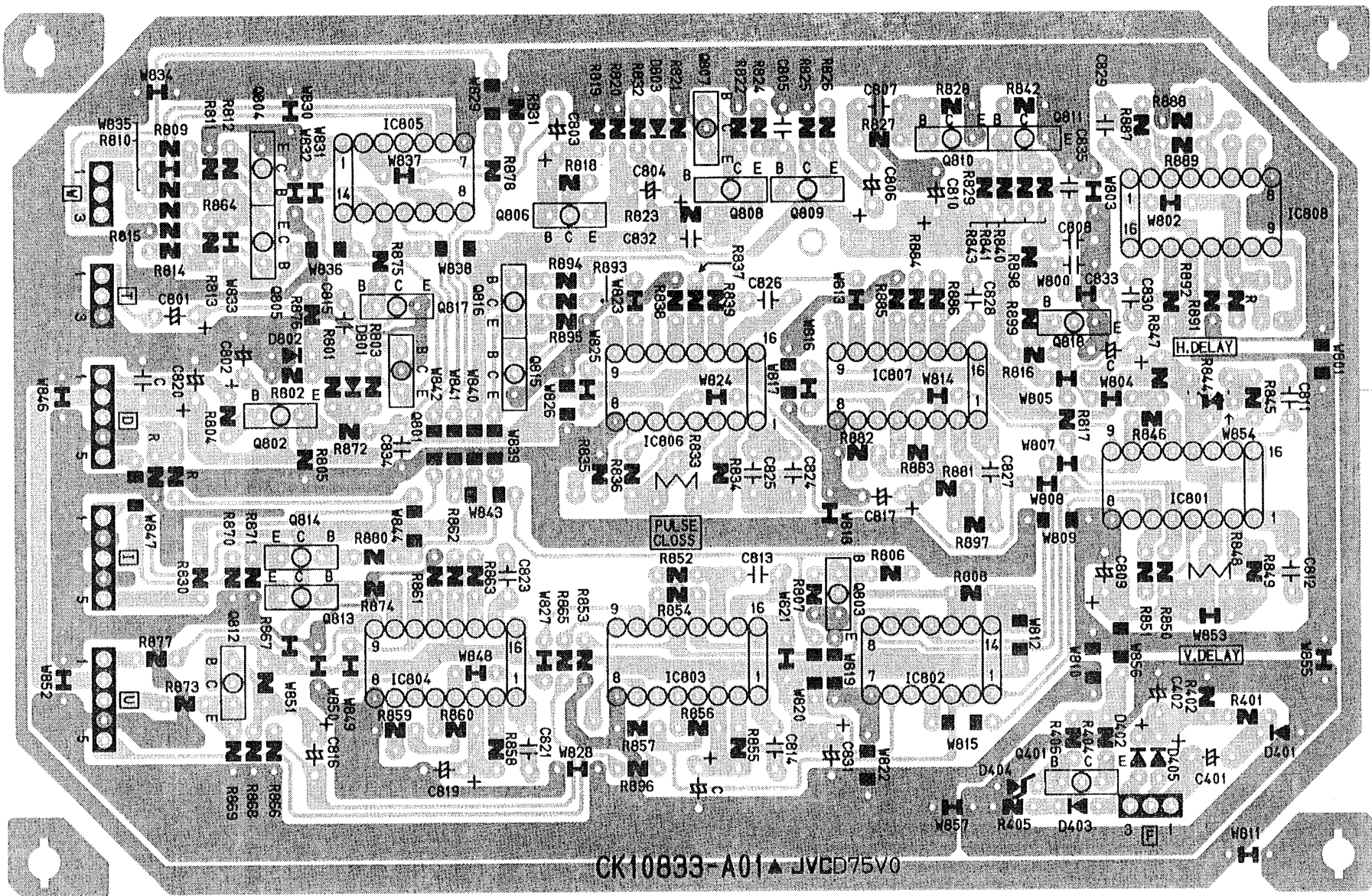


PULSE CROSS SCHEMATIC DIAGRAM

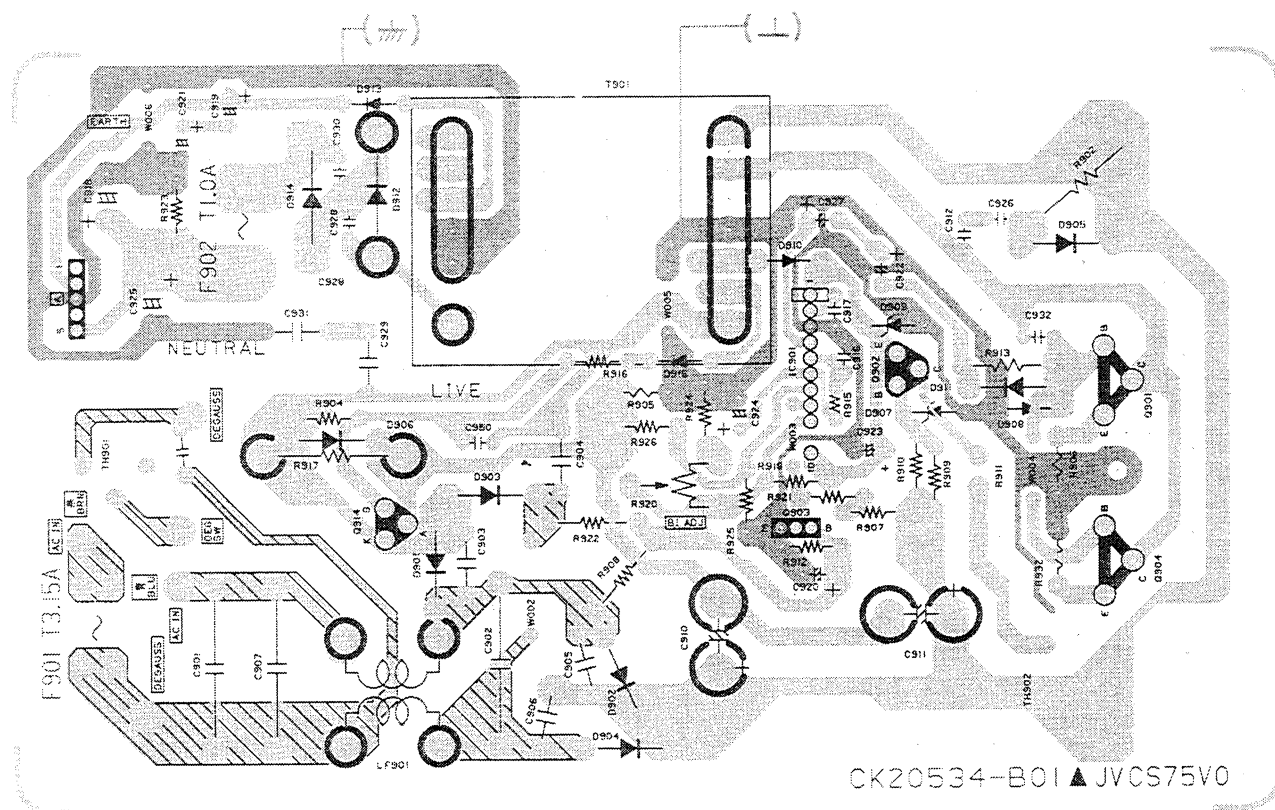




PULSE CROSS P.C. BOARD



POWER P.C. BOARD



■ PARTS LIST (Shaded parts in the schematic diagram)

SYMBOL NO.	PART NO.	PART NAME	SYMBOL NO.	PART NO.	PART NAME
MAIN PCB	ASSY	(FX-1021A)	CAPACITOR		
VARIABLE	RESISTOR		C1415	QETC1VM-107Z	E CAP.
R1535	QVZ3102-008	V R(H CENTER)	C1416	QETB1VM-477	E CAP.
RESISTOR			C1517	QEH62CM-105MZ	E CAP.
R1424	ORD122J-581S	C R	C1518	QETB2CM-476	E CAP.
R1427	ORG019J-471S	OM R	C1519	QFZ0089-534S	MPP CAP.
R1429	ORX029J-1R2A	MF R	C1521	QFZ0081-2201S	MPP CAP.
R1512	ORX029J-3R3A	C R	C1522	QFZ0081-3501S	PP CAP.
R1513	ORD142J-820S	C R	C1523	QFM72DK-103M	M CAP.
R1534	ORD161J-103Y	C R	C1524	QFM72DK-333M	M CAP.
R1536	ORG019J-151S	OM R	C1525	QFZ0081-2001S	MPP CAP.
R1537	ORG019J-151S	OM R	C1526	QFM72AK-154M	M CAP.
R1538	ORX029J-1R2A	MF R	C1528	QET52ER-475	E CAP.
R1542	QRD161J-272Y	C R	C1529	QEH61EM-477MZ	E CAP.
R1544	QRD161J-104Y	C R	C1701	QETC1CM-107Z	E CAP.
R1548	QTG019J-152S	OM R	C1702	QETC1VM-107Z	E CAP.
R1549	ORG019J-471S	OM R	TRANSF		
R1551	ORG029J-152A	OM R	T1503	CE40381-00A	SIDE PIN TRANSF
R1552	ORG019J-471S	OM R	COIL		
R1553	ORG029J-102A	OM R	L1501	A04725-4111	PEAKING COIL
R1701	QRD161J-472Y	C R	L1502	A39934	LINEARITY COIL
R1702	CJ39520-00P	R BLOCK			

SYMBOL NO.	PART NO.	PART NAME	SYMBOL NO.	PART NO.	PART NAME
COIL			RESISTOR		
L1503	CE41238-00A	WIDTH COIL	R9909	QRD122J-394S	C R
L1504	A39835	LINIARITY COIL	R9910	QRD122J-394S	C R
L1505	CE41238-00A	WIDTH COIL	R9911	QRZ0069-472	UNF R
L1506	CJ30030-043	HEATER CHOKE	R9913	QRG029J-220A	OM R
DIODE			R9918	QRV142F-2702	MF R
D1401	1SR124-400-HJ	SI.DIODE	R9922	QRC122K-104	COMP R
D1402	U19E-FK	SI.DIODE	R9923	QRD122J-473S	C R
D1504	1SR124-400-HJ	SI.DIODE	R9924	QRV142F-1002	MF R
D1506	1SR124-400-HJ	SI.DIODE	CAPACITOR		
D1507	1SR124-400-HJ	SI.DIODE	C9901	QFZ9022-224M	MF CAP
D1508	RM2C-LFA1	SI.DIODE	C9902	QFZ9022-104M	MF CAP
D1511	V19E	SI.DIODE	C9903	QCZ9036-472M	C CAP.
D1512	U19E-FK	SI.DIODE	C9904	QCZ9036-472M	C CAP.
D1701	HZ7B2LV1	ZENER DIODE	C9905	QCZ9036-472M	C CAP.
D1702	V19E	SI.DIODE	C9906	QCZ9036-472M	C CAP.
TRANSISTOR			C9907	QFZ9022-224M	MF CAP.
Q1502	2SD1426	SI.TRANSISTOR	C9910	QEZ0084-227R	E CAP.
Q1509	2SD1133(C,D)-L	SI.TRANSISTOR	C9911	QEZ0084-227R	E CAP
Q1904	2SD982	SI.TRANSISTOR	C9912	QCY32 HK-222A	C CAP.
I C			C9918	QEH52CM-476M	E CAP.
IC1401	AN5515	I C	C9923	QEZ0094-477R	E CAP.
IC1501	HA11423	I.C	C9925	QEH52CM-476M	E CAP.
OTHERS			C9928	QCY32HK-271M	C CAP.
FR1704	QRZ0055-4R7M	F R	C9929	QCZ9036-472M	C CAP.
FR1901	QRZ0055-561M	F R	C9931	QCZ9036-472M	C CAP.
RY1501	CESK006-001	RELAY	TRANSF		
CRT SOCKET	PCB ASSY	(FX-3013A)	T9901	CE40967-00H	SW TRANSF
RESISTOR			DIODE		
R3051	QRG029J-153	OM R	D9901	TVR4N	SI.DIODE
R3055	QRG019J-682S	OM R	D9902	TVR4N	SI.DIODE
R3154	QRG029J-153	OM R	D9903	TVR4N	SI.DIODE
R3157	QRG019J-682S	OM R	D9904	TVR4N	SI.DIODE
R3158	QRG029J-153	OM R	D9905	RG2A	SI.DIODE
R3254	QRG029J-153	OM R	D9910	EG1Z	SI.DIODE
R3257	QRG019J-682S	OM R	D9912	RG4C-LFK2	SI.DIODE
R3258	QRG029J-153	OM R	TRANSISTOR		
R3354	QRG029J-153	OM R	Q9901	2SC3461	SI.TRANSISTOR
R3357	QRG019J-682S	OM R	Q9902	2SD1409	SI.TRANSISTOR
R3358	QRG029J-153	OM R	Q9904	2SC3461	SI.TRANSISTOR
CAPACITOR			I C		
C3052	QET52ER-106	E CAP.	IC9901	SI-8100D	I C
C3053	QETB2EM-336	E CAP.	OTHERS		
OTHERS			F9901	QMF51E2-3R15S	FUSE
A75522-C		CRT SOCKET	F9902	QMF51E2-1R0S	FUSE
F CONTROL	PCB ASSY	(FX-4014A)	LF9901	CE40847-00C	LINE FILTER
RESISTOR			NF01	CE40811-00Q	NOESE FILTER
R4702	QRD141J-182SY	C R	TH9901	A76038-T	POSISTOR
POWER PCB	ASSY	(FX-9010A)	TH9902	CE40643-001	POSISTOR
VARIABLE	RESISTOR		OUTSIDE OF	PCB ASSY	
R9920	QVPHA03-203M	V R(B1 ADJ)	V01	M36JGL30X	PICTURE TUBE
RESISTOR			L01	CELD011-001	DEG COIL
R9902	QRG039J-473A	OM R	DY01	CE20054-A0A	DEFLECTION YOKE
R9905	QRM055K-R22	MP R	T2501	CJ27094-00C	HV TRANSF
R9906	QRM055K-R47	MP R		QSP4D21-C04	POWER SWITCH
R9907	QRD122J-124S	C R		QSP4C11-C02	DEG SWITCH
R9908	QRC122K-104	COMP R		QMP4718-200R	POWER CORD

CAUTION

- The parts marked  are very important for the safety. When replacing these parts, be sure to use specified ones to secure the safety and performance.
- The parts which do not have the drawing in this Parts List, P.C. Board Ass'y and the Part No. columns of which are filled with lines —, will not be supplied.
- As a rule, the resistors and capacitors which are indicated as shown in (NOTE 2) "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board.
When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to (NOTE 2).

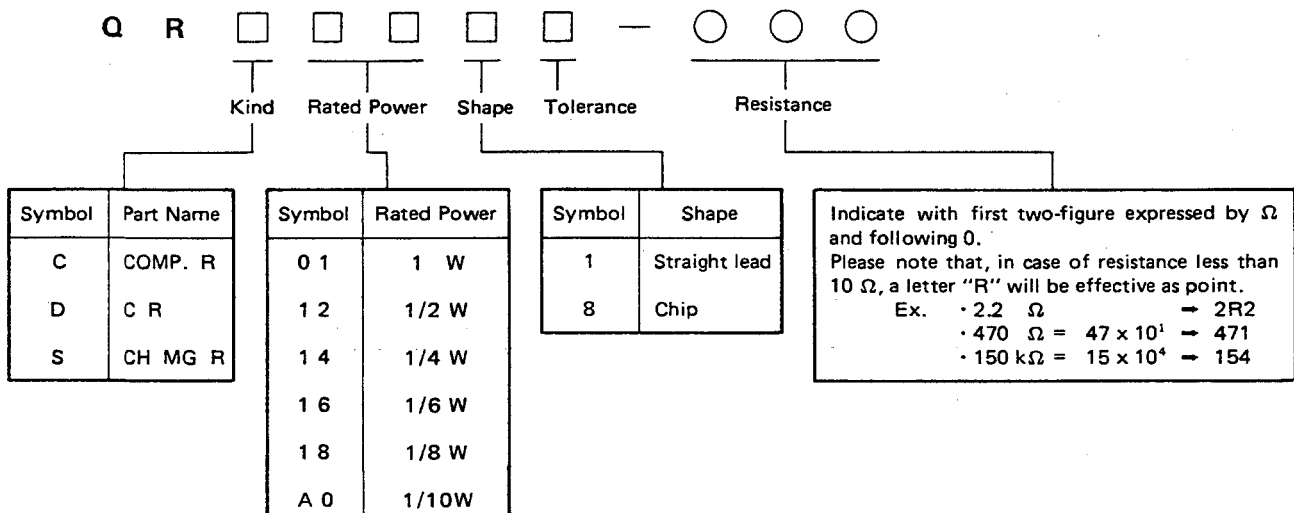
(NOTE 1) ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Aluminum Bi-Polar Electrolytic Capacitor

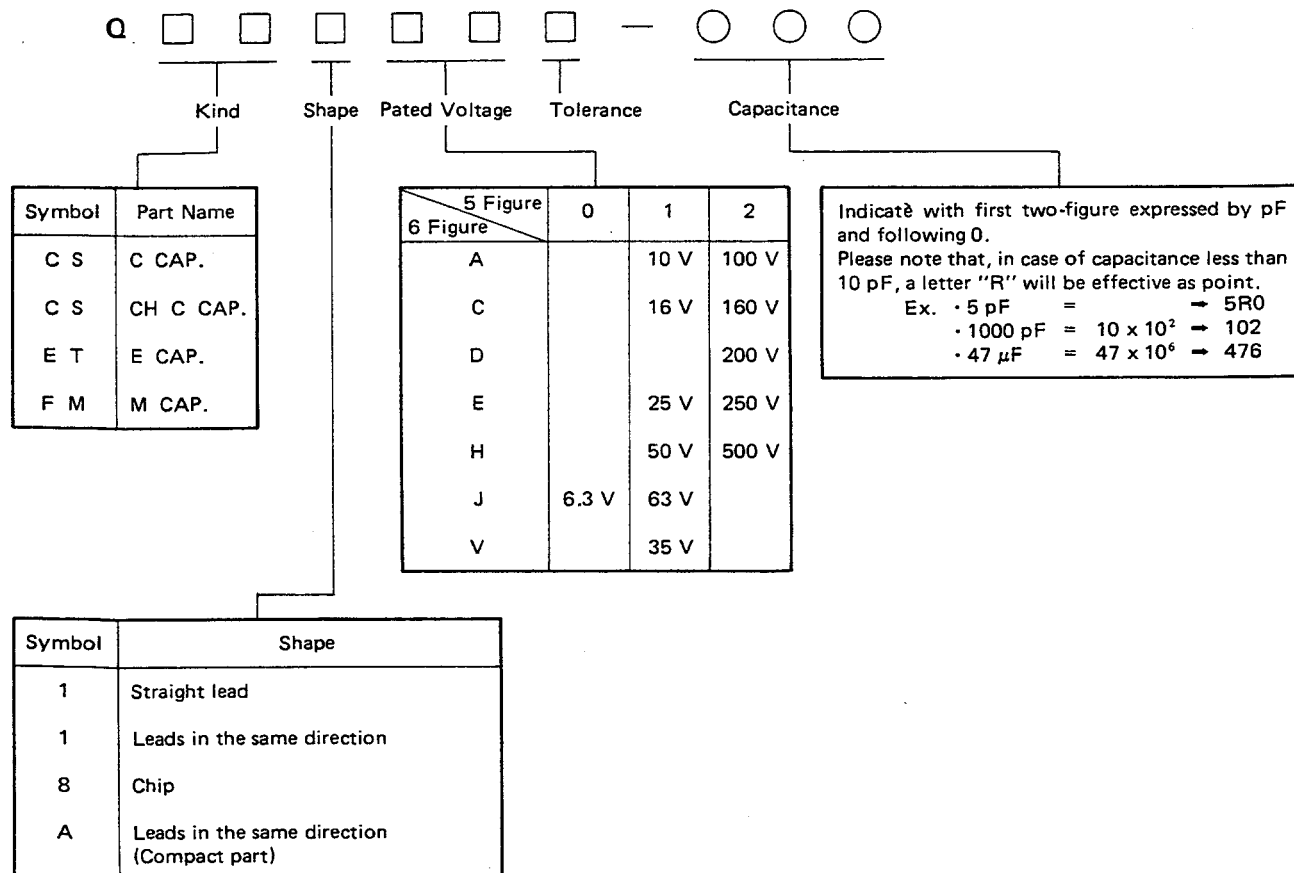
TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
± 1 %	± 2 %	± 5 %	± 10 %	± 20 %	± 30 %	+ 30 % - 10 %	+ 50 % - 10 %	+ 80 % - 20 %	+ 100 % - 0 %

NOTE 2 HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR



■ CAPACITOR



REPLACEMENT PARTS LIST

MAIN REPLACEMENT PARTS LIST

SYMBOL NO.	△	PART NO.	PART NAME	REMARKS
CRT & TUNER		A75034-B	P&C MAGNET	
		CE40764-00A	WEDGE ASSY	×4
	△	CE20054-A0A	DEFLECTION YOKE	DY01
	△	CELD011-001	DEG COIL	L01
	△	M36JGL30X	PICTURE TUBE	V01
VARIABLE R		QVPC609-103H	V R (RGB SUB CONT	RAST) 10kΩ B
		QVPC609-102H	V R (Y LEVEL)	1kΩ B
		QVPC609-104H	V R (BETA LEVEL)	100kΩ B
		QVPC608-222M	V R (RGB W/B 1)	2.2kΩ B
		QVPC608-104M	V R (RGB W/B 2)	100kΩ B
		QVPC608-222M	V R (RGB W/B 3)	2.2kΩ B
		QVPE607-471M	V R (V LIN)	470 Ω B
		QVPE607-471M	V R (NORMAL V HEI	GHT) 470 Ω B
		QVPE607-222M	V R (NARROW V HEI	GHT) 2.2kΩ B
		QVZ3211-052	V R (V CENTER)	500 Ω B
		QVPC608-472M	V R (H HOLD)	4.7kΩ B
	△	QVZ3102-008	V R (H CENTER)	500 Ω B
		QVPC609-102H	V R (H POSITION)	1kΩ B
		QVPE804-103H	V R (UNDER R CUT	OFF) 10kΩ B
		QVPE804-103H	V R (NORMAL R CUT	OFF) 10kΩ B
		QVPE804-103H	V R (R DRIVE)	10kΩ B
		QVPE804-103H	V R (UNDER G CUT	OFF) 10kΩ B
		QVPE804-103H	V R (NORMAL G CUT	OFF) 10kΩ B
		QVPE804-103H	V R (G DRIVE)	10kΩ B
		QVPE804-103H	V R (UNDER B CUT	OFF) 10kΩ B
		QVPE804-103H	V R (NORMAL B CUT	OFF) 10kΩ B
		QVPE804-103H	V R (B DRIVE)	10kΩ B
		QVCA012-CB53M	V R (V HOLD)	5kΩ B
		QVPE607-223M	V R (SUB PHASE)	22kΩ B
		QVCA013-CB53M	V R (PHASE)	5kΩ B
		QVPE607-103M	V R (SUB CHROMA)	10kΩ B
		QVCA013-CB14M	V R (CHROMA)	10kΩ B
		QVPE607-103M	V R (SUB APERTURE)	10kΩ B
		QVCA013-CB14M	V R (APERTURE)	10kΩ B
		QVCA013-CB53M	V R (BRIGHT)	5kΩ B
		QVPE607-103M	V R (SUB BRIGHT)	10kΩ B
		QVPE607-473M	V R (SUB CONTRAST)	47kΩ B
		QVCA013-CB14M	V R (CONTRAST)	10kΩ B
		QVPC609-102H	V R (CONT)	1kΩ B
		QVPC609-203H	V R (COLOR)	20kΩ B
		QVPC609-202H	V R (LISSAJOUS AD J)	2kΩ B
		QVPC609-503H	V R (P. CH PULS)	50kΩ B
		QVPC609-503H	V R (PULSE CROSS)	50kΩ B
	△	QVPHA03-203M	V R (B1 ADJ)	20kΩ B
TRANSFORMER				
	△	CE40967-00H	SW TRANSF	
DIODE				
	△	1SR124-400-HJ	SI. DIODE	
D1401	△	U19E-FK	SI. DIODE	
D1402	△	RD12E (B1)	ZENER DIODE	
D1502	△	RM2C-LFA1	SI. DIODE	
D1508	△	V19E	SI. DIODE	
D1511	△			
D1512	△	U19E-FK	SI. DIODE	
D1513		MA4220 (M) -Y	ZENER DIODE	
D1514		RD12E (B)	ZENER DIODE	
D1516		RD18E (B)	ZENER DIODE	
D1701	△	HZ7B2LV1	ZENER DIODE	

SYMBOL NO.	△	PART NO.	PART NAME	REMARKS
DIODE				
D1702	△	V19E	SI. DIODE	
D3151		RD20E (B)	ZENER DIODE	
D3251		RD20E (B)	ZENER DIODE	
D3351		RD20E (B)	ZENER DIODE	
D4901		GL-5PG23	L E D	Power
D4902		LD-701DU	L. E. D.	Tally
D9901	△	TVR4N	SI. DIODE	
D9902	△	TVR4N	SI. DIODE	
D9903	△	TVR4N	SI. DIODE	
D9904	△	TVR4N	SI. DIODE	
D9907		RD10E (B)	ZENER DIODE	
D9914		RG4C-LFK2	SI DIODE	
TRANSISTOR				
Q1502	△	2SD1426	SI. TRANSISTOR	H. OUT
Q3151		2SC2068	SI. TRANSISTOR	
Q3152		2SC1360	SI. TRANSISTOR	
Q3251		2SC2068	SI. TRANSISTOR	
Q3252		2SC1360	SI. TRANSISTOR	
Q3351		2SC2068	SI. TRANSISTOR	
Q3352		2SC1360	SI. TRANSISTOR	
IC				
IC1001		AN5860	I. C. (M)	
IC1002		AN5867K-S	I. C.	
IC1004		M51493P	I. C. (M)	
IC1005		AN5860	I. C. (M)	
IC1006		AN5860	I. C. (M)	
IC1401	△	AN5515	I. C. (M)	
IC1501	△	HA11423	I. C.	
IC4005		TC4053BP	I. C.	
IC6601		LA7016	I. C.	
IC6602		TC4066BP	I. C. (M)	
IC6603		AN5625N	I. C.	
IC6604		TC4538BP	I. C. (M)	
IC6801		TC4538BP	I. C. (M)	
IC6802		TC4066BP	I. C. (M)	
IC6803		TC4538BP	I. C. (M)	
IC6804		TC4538BP	I. C. (M)	
IC6805		TC4066BP	I. C. (M)	
IC6806		TC4538BP	I. C. (M)	
IC6807		TC4538BP	I. C. (M)	
IC9901	△	SI-8100D	I. C.	
FUSE				
F9901	△	QMF51E2-3R15S	FUSE	3. 15A
F9902	△	QMF51E2-1R0S	FUSE	1A
OTHERS				
	△	QSP4C11-C02	DEG SWITCH	
	△	QSP4D21-C04	POWER SWITCH	Power
		CM21354-C0A	AV TERMINAL ASSY	Include No. 201~208
		CM40498-002	MAIN KNOB	×2 Power, Deg.
		CM11429-00B	CABINET ASSY	
		CM11430-00B	FRONT ASSY	
		CM40495-002	BUTTON	(×9)
		CM42758-001	KNOB	Set Up
		CM11659-00A	REAR COVER ASSY	Include No. 301
	△	QMP4718-200R	POWER CORD	
LF9901	△	CE40847-00C	LINE FILTER	
NF01	△	CE40811-00Q	NOISE FILTER	

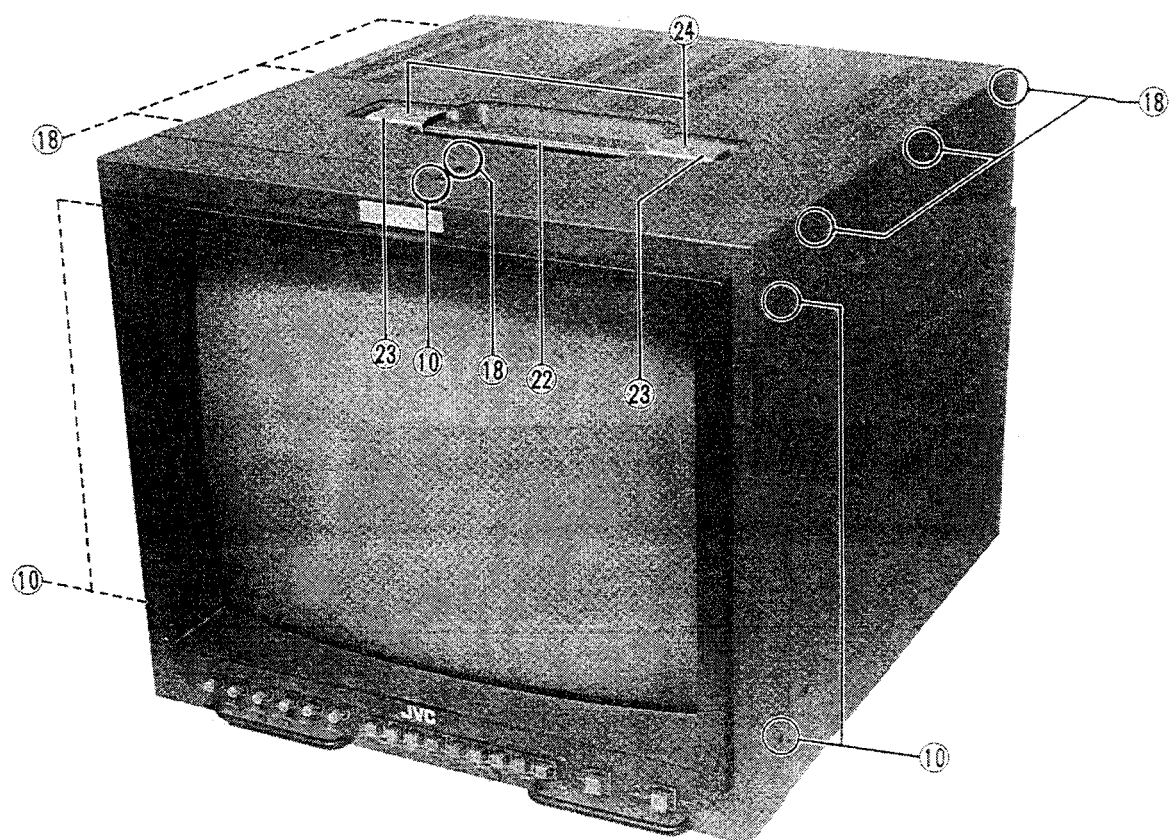
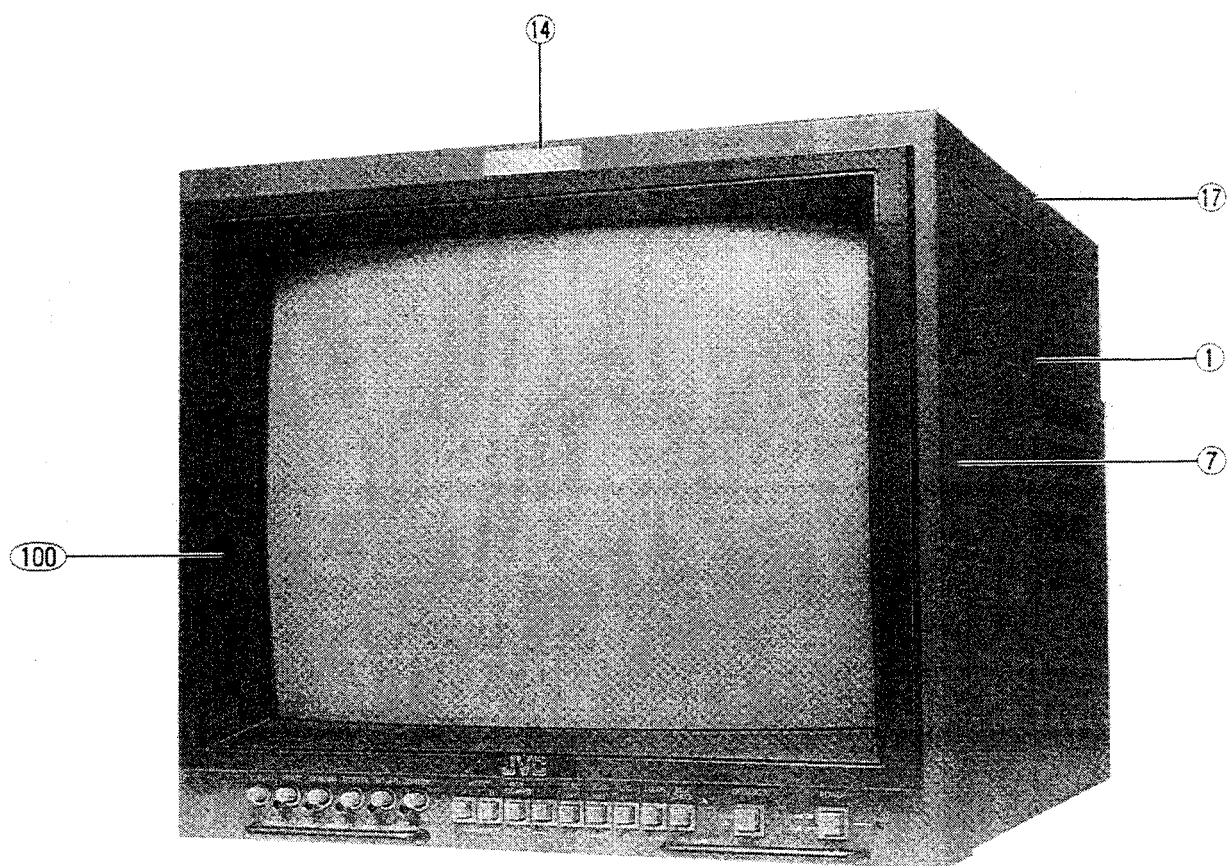
SYMBOL NO.	△	PART NO.	PART NAME	REMARKS
OTHERS				
S4001		QSP2C22-C01	PUSH SWITCH	Set Up
S4701		QST2931-C01	PUSH SWITCH	User control SWs
S4702		QSS1N12-C01	SLIDE SWITCH	Tally
S5001		QSS1C22-C02	SLIDE SWITCH	Video. A
S5002		QSS1C22-C02	SLIDE SWITCH	Video. B
S5003		QSS1C22-C02	SLIDE SWITCH	Sync
S5004		QSS1C22-C02	SLIDE SWITCH	Y/C
S5005		QSS1C22-C02	SLIDE SWITCH	Component/RGB
S5006		QSS1C22-C02	SLIDE SWITCH	Notch
S5007		QSS1C22-C02	SLIDE SWITCH	Fast/Normal
S5008		QSS1C22-C02	SLIDE SWITCH	MN/Betacam
S5101		QSS1C22-C02	SLIDE SWITCH	R/R-Y
S5201		QSS1C22-C02	SLIDE SWITCH	G/Y
S5301		QSS1C22-C02	SLIDE SWITCH	B/B-Y
TH9901	△	A76038-T	POSISTOR	
TH9902	△	CE40643-001	POSISTOR	
X6601		A76090	CRYSTAL	

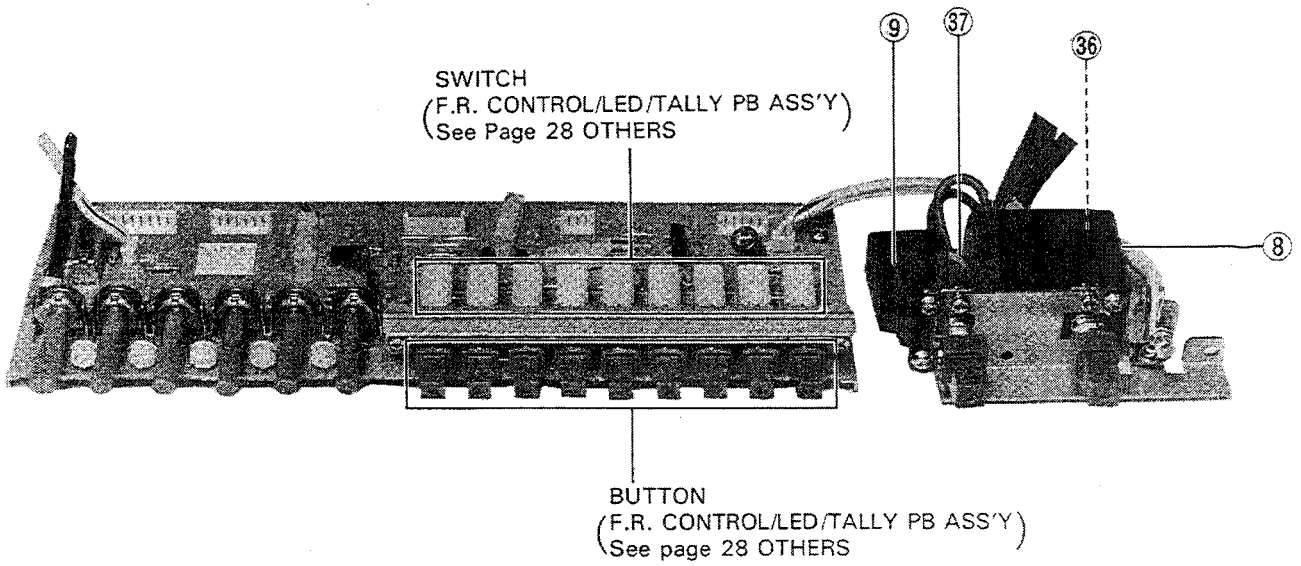
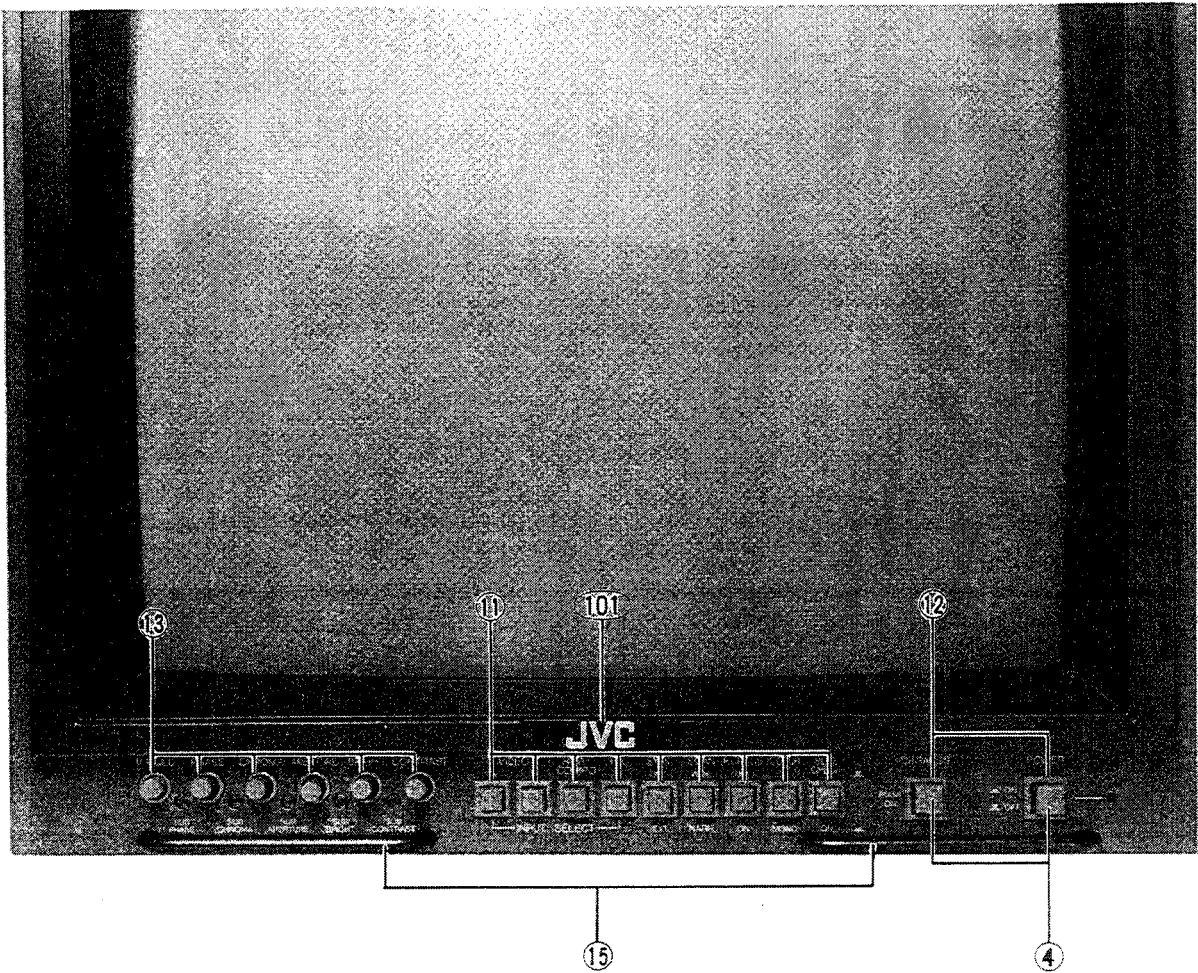
■ PC BOARD ASS'Y USED IN THIS TV SET

FX-1021A	MAIN P.C.B Ass'y	FX-5003A	INPUT P.C.B. Ass'y
FX-3013A	CRT SOCKET P.C.B. Ass'y	FX-6011A	DECODER/PULSE CROSS P.C.B. Ass'y
FX-4014A	F.R. CONTROL/LED TALLY P.C.B. Ass'y	FX-9010A	POWER P.C.B. Ass'y

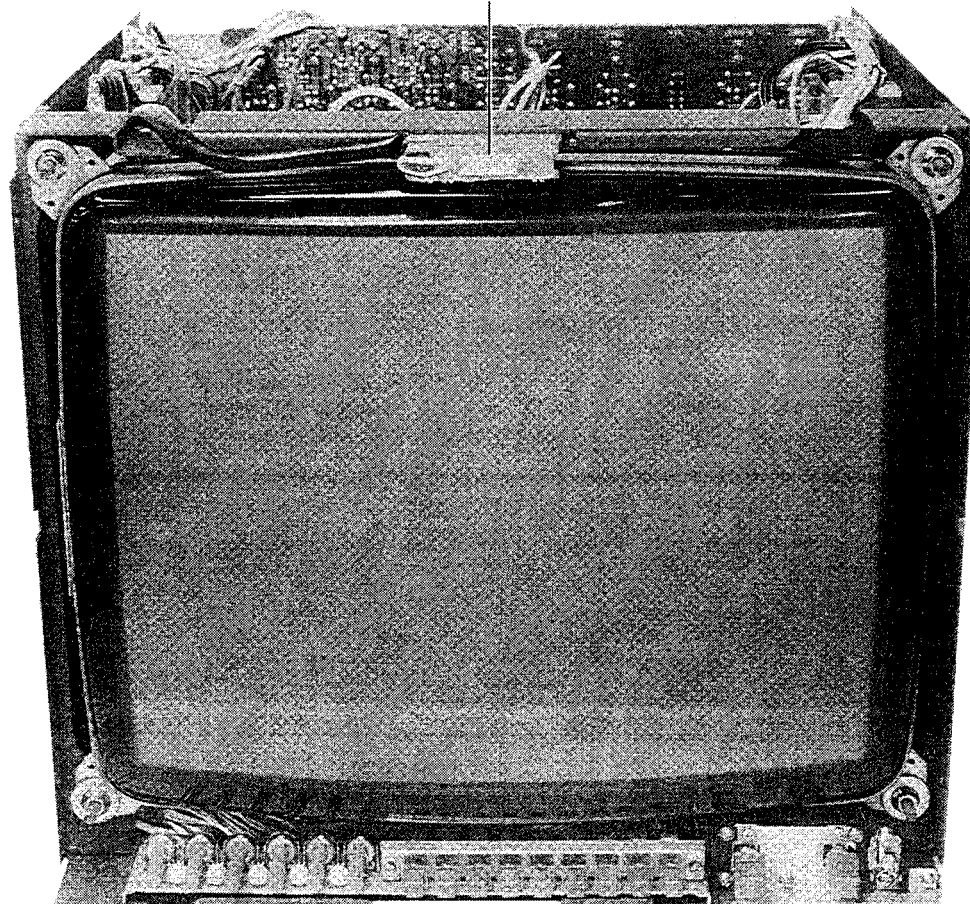
■ CHASSIS AND CABINET PARTS LIST

SYMBOL NO.	PART NO.	PART NAME	REMARKS
1	CM11429-00B	CABINET ASSY	
2	QZF2207-001	FOOT	×4
3	GBSB3008Z	TAP SCREW	×4 Foot
4	CM40498-002	MAIN KNOB	×2 Power, Deg.
7	CM11430-00B	FRONT ASSY	
8	CM45587-001	SWITCH BARRIR R	
9	CM45588-001	SWITCH BARRIR L	
10	SHSB3008M	TAP SCREW	×5 Front Assy
11	CM41725-001	KNOB BUSH A	×9
12	CM41726-001	KNOB BUSH B	×2
13	CM41870-A01	KNOB BUSH-C	×6
14	CM42776-001	TALLY PLATE	
15	CM41895-003	PROTECTOR	×2
16	SSSP3006Z	SCREW	×4 Protector
17	CM11431-00B	TOP COVER ASSY	
18	SHSB3008M	TAP SCREW	×7 Top Cover Assy
20	CM45400-00B	ASSY SCREW	×12
21	CM21938-001 (R)	ROLL R LABEL	
22	PU46361-2	HANDLE	
23	PU46385-3	HANDLE COVER	×2
24	SHSP4016R	SCREW	×2 Handle
△ 28	CJ27094-00B	H. V. TRANSF.	T2501
△ 29	CELD011-001	DEG COIL	L01
△ 30	M36JGL30X	PICTURE TUBE	V01
△ 31	CE20054-A0A	DEFLECTION YOKE	DY01
32	A75034-B	P&C MAGNET	
33	CE40764-00A	WEDGE ASSY	×4
34	CH30168-00K	BRAIDED ASSY	
35	A48457	SPRING	
△ 36	QSP4D21-C04	POWER SWITCH	Power
△ 37	QSP4C11-C02	DEG SWITCH	
38	CJ40713-001	FOCUS COVER	
39	CM45432-A01	LED LENS	
100	CM20648-C0B-M0	FRONT ESCUTCHEON	Include No. 101
101	C40900-2	JVC MARK	
200	CM21354-C0A	AV TERMINAL ASSY	Include No. 201~208
201	BNC-R-KG3	BNC CONNECTOR	×12
202	XLR-7-32	CANNON CONNECTOR	
203	1308-SBA	8P BRACKET	
204	S1308-DS2	8P SOCKET	
205	RM15TRD-12P	12P CONNECTOR	Betacam
206	RM15QR-12P	12P CONNECTOR	MH
207	RM12BRD-7S	7P CONNECTOR	Y/C358 (Out)
208	RM12BRD-7P	7P CONNECTOR	Y/C358 (In)
300	CM11659-00A	REAR COVER ASSY	Include No. 301
301	DPSP3010M	ASSY SCREW	

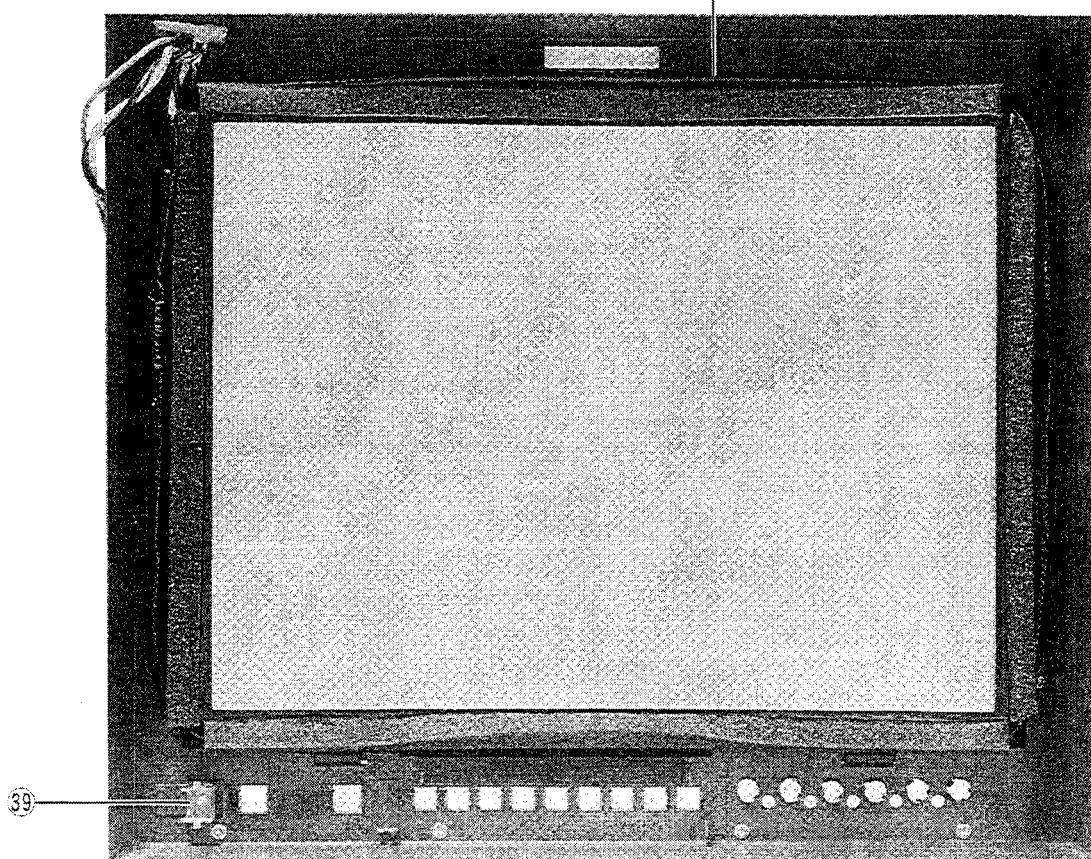




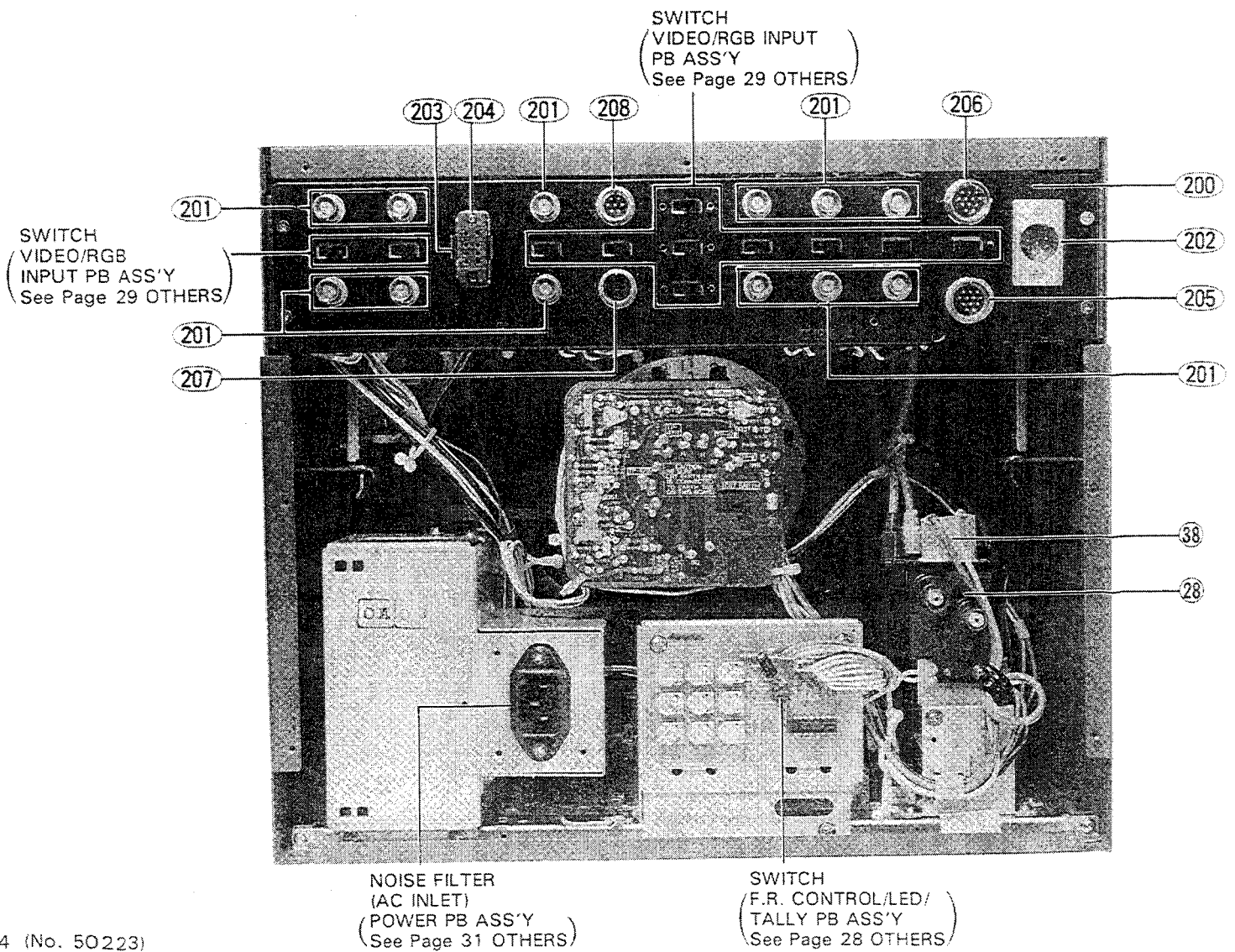
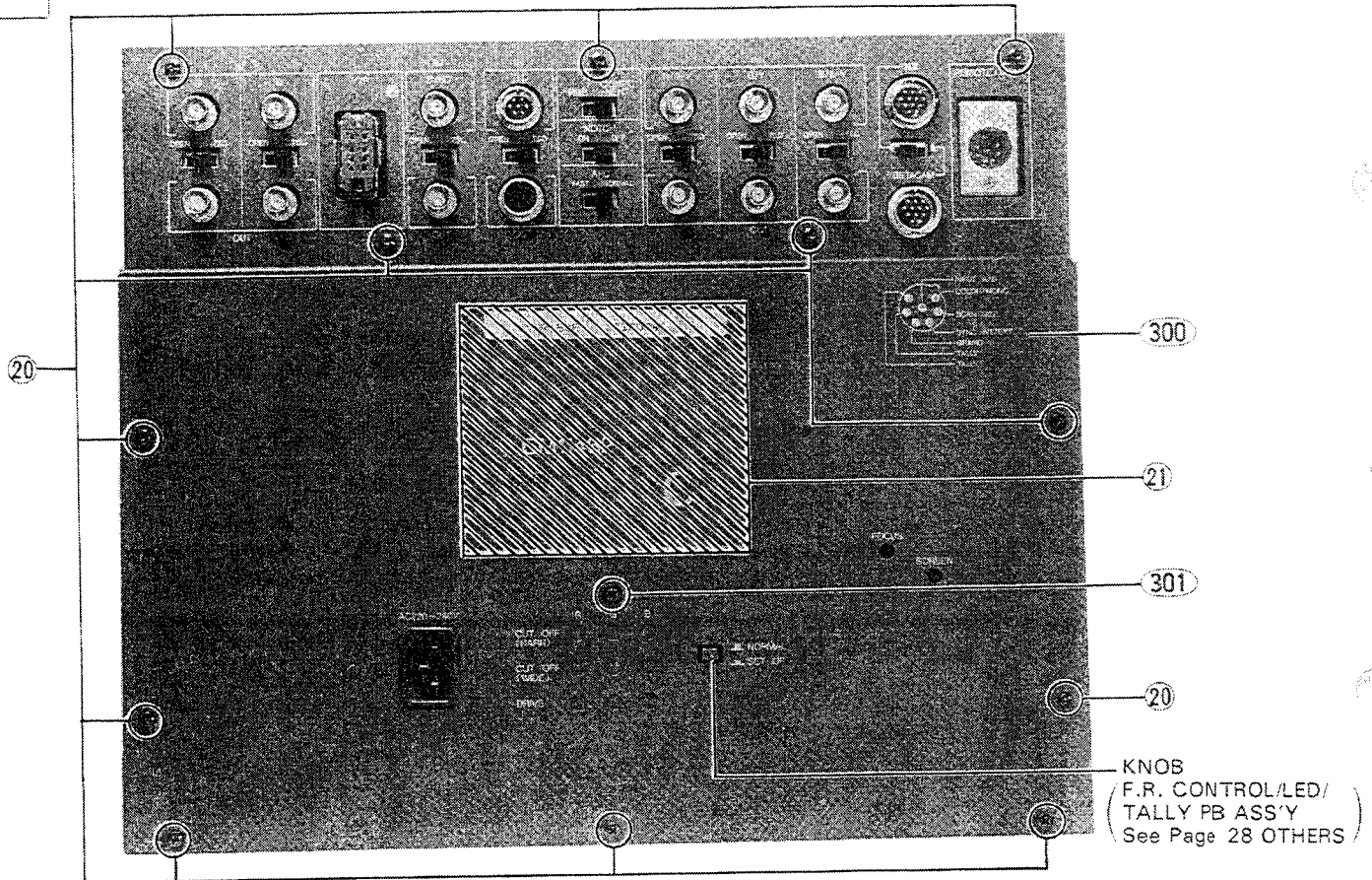
LED
(F.R. CONTROL/LED)
(TALLY PB ASS'Y)
See page 28 DIODE

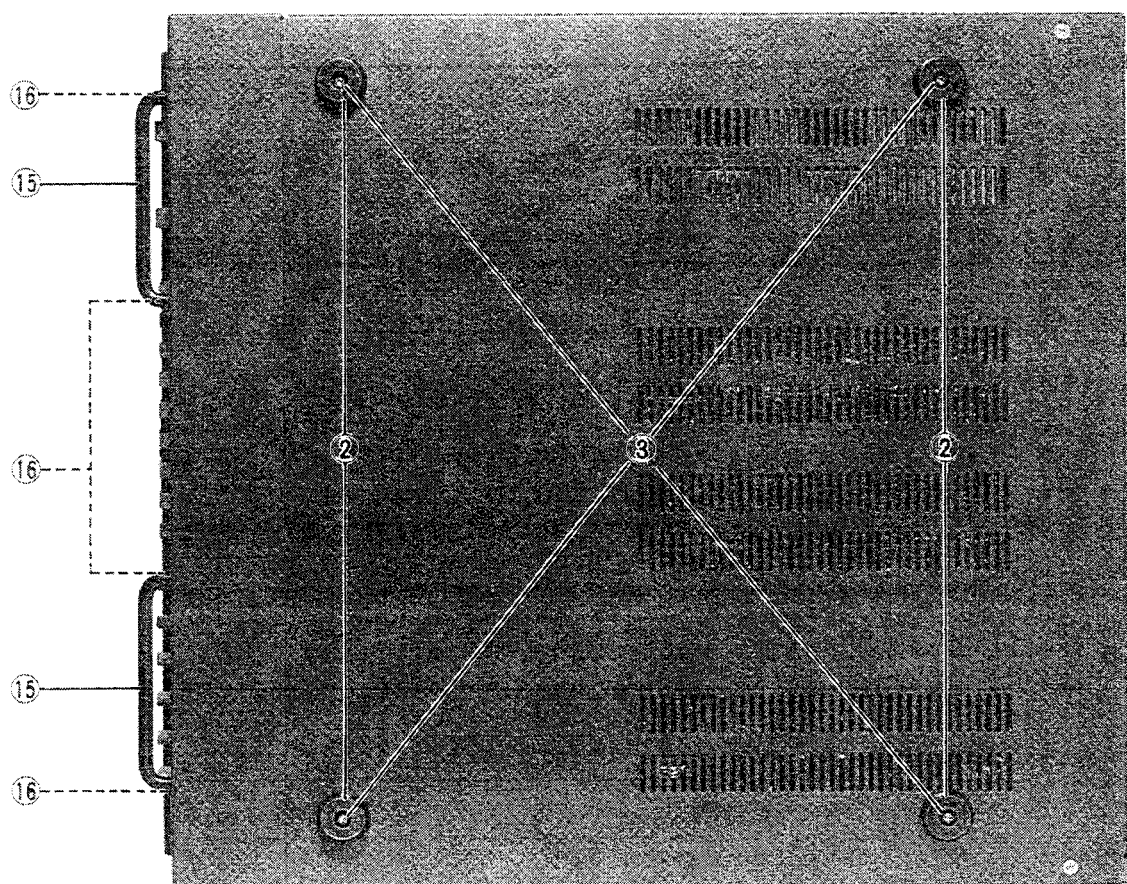
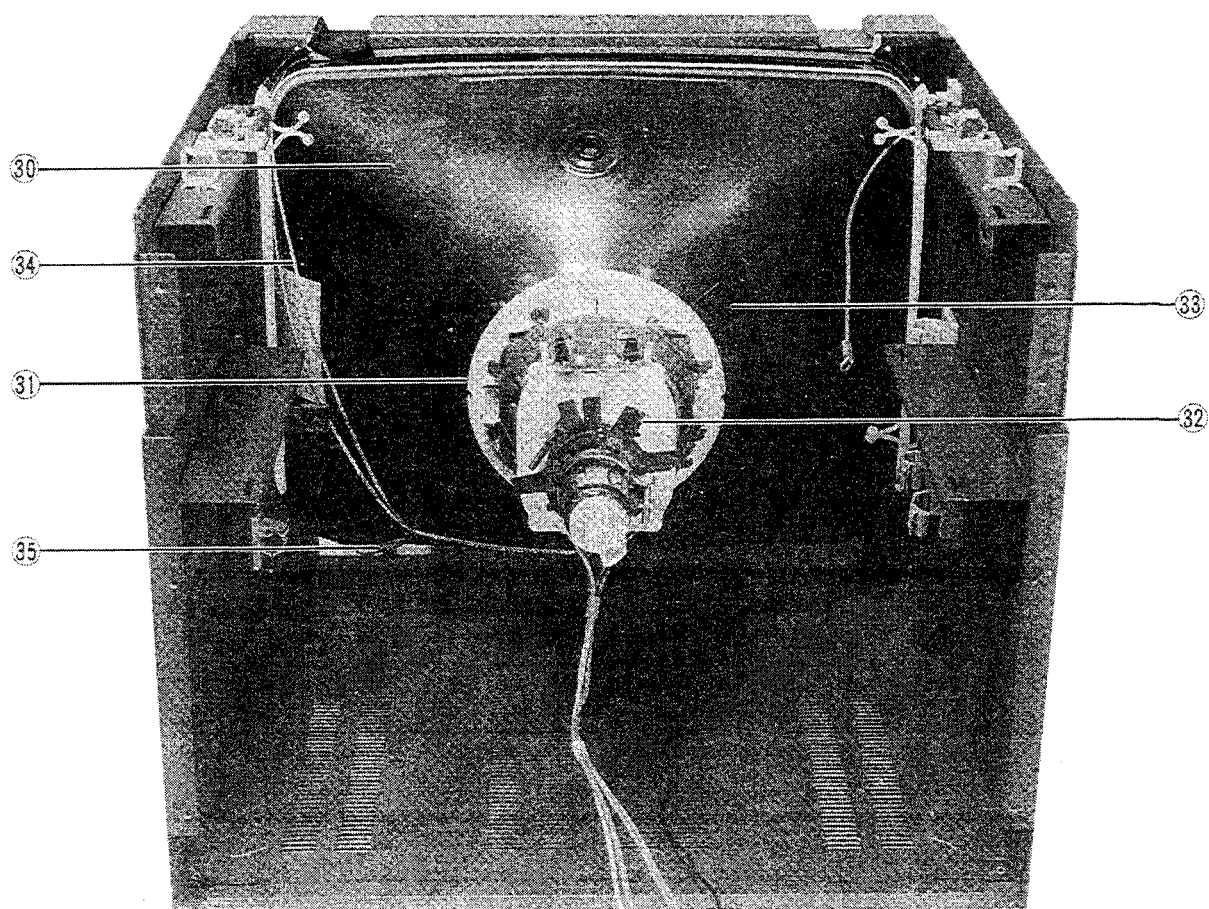


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■ P.C. BOARD PARTS LIST MAIN P.C. B. Ass'y (FX-1021A)

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R			
R1012	QVPC609-103H	V R (RGB SUB CONT	RAST) 10kΩ B
R1029	QVPC609-102H	V R (Y LEVEL)	1kΩ B
R1085	QVPC609-104H	V R (BETA LEVEL)	100kΩ B
R1146	QVPC608-222M	V R (RGB W/B 1)	2.2kΩ B
R1261	QVPC608-104M	V R (RGB W/B 2)	100kΩ B
R1346	QVPC608-222M	V R (RGB W/B 3)	2.2kΩ B
R1409	QVPE607-471M	V R (V LIN)	470 Ω B
R1416	QVPE607-471M	V R (NORMAL V HEI	GHT) 470 Ω B
R1417	QVPE607-222M	V R (NARROW V HEI	GHT) 2.2kΩ B
R1425	QV23211-052	V R (V CENTER)	500 Ω B
R1503	QVPC608-472M	V R (H HOLD)	4.7kΩ B
R1535	QVZ3102-008	V R (H CENTER)	500 Ω B
R1561	QVPC609-102H	V R (H POSITION)	1kΩ B
RESISTOR			
R1415	QRX019J-2R7S	MF R	2.7 Ω 1W J
R1421	QRX019J-4R7S	MF R	2.7 Ω 1W J
R1423	QRG019J-102S	OM R	1kΩ 1W J
R1424	QRD122J-561S	C R	560 Ω 1/2W J
R1427	QRG019J-471S	OM R	470 Ω 1W J
R1429	QRX029J-1R2A	MF R	1.2 Ω 2W J
R1512	QRX029J-3R3A	MF R	3.3 Ω 2W J
R1513	QRD142J-820S	C R	82 Ω 1/4W J
R1519	QRX029J-1R2A	MF R	1.2 Ω 2W J
R1527	QRG019J-271S	OM R	270 Ω 1W J
R1531	QRG019J-680S	OM R	68 Ω 1W J
R1534	QRD161J-103Y	C R	10kΩ 1/6W J
R1536	QRG019J-151S	OM R	150 Ω 1W J
R1537	QRG019J-151S	OM R	150 Ω 1W J
R1538	QRX029J-1R2A	MF R	1.2 Ω 2W J
R1542	QRD161J-272Y	C R	2.7kΩ 1/6W J
R1544	QRD161J-104Y	C R	100kΩ 1/6W J
R1548	QRG019J-152S	OM R	1.5kΩ 1W J
R1549	QRG019J-471S	OM R	470 Ω 1W J
R1551	QRG029J-152A	OM R	1.5kΩ 2W J
R1552	QRG019J-471S	OM R	470 Ω 1W J
R1553	QRG029J-102A	OM R	1kΩ 2W J
R1701	QRD161J-472Y	C R	4.7kΩ 1/6W J
R1702	CJ39520-00P	R BLOCK	
R1902	QRD149J-2R2S	C R	2.2 Ω 1/4W J
CAPACITOR			
C1016	QFV71HJ-104MZ	TF CAP.	0.1μF 50V J
C1034	QFV71HJ-224MZ	TF CAP.	0.22μF 50V J
C1043	QCF31HP-103A	CH C CAP.	0.01μF 50V P
C1044	QFV71HJ-224MZ	TF CAP.	0.22μF 50V J
C1104	QEN61HM-474Z	BP E CAP.	0.47μF 50V M
C1105	QEN51CM-106	BP E CAP.	10μF 16V M
C1107	QEN61VM-475Z	BP E CAP.	4.7μF 35V M
C1108	QFV71HJ-184MZ	TF CAP.	0.18μF 50V J
C1111	QEN61HM-105Z	BP E CAP.	1μF 50V M
C1113	QFV71HJ-154MZ	TF CAP.	0.15μF 50V J
C1117	QEN61HM-105Z	BP E CAP.	1μF 50V M
C1118	QCF31HP-103AZ	CH C CAP.	0.01μF 50V P
C1204	QEN61HM-474Z	BP E CAP.	0.47μF 50V M
C1205	QEN61CM-106Z	BP E CAP.	10μF 16V M
C1207	QEN61VM-475Z	BP E CAP.	4.7μF 35V M
C1208	QFV71HJ-184MZ	TF CAP.	0.18μF 50V J
C1211	QEN61HM-105Z	BP E CAP.	1μF 50V M
C1213	QFV71HJ-154MZ	TF CAP.	0.15μF 50V J

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
CAPACITOR			
C1218	QCF31HP-103A	CH C CAP.	0.01μF 50V P
C1219	QEN61HM-474Z	BP E CAP.	0.47μF 50V M
C1304	QEN61HM-474Z	BP E CAP.	0.47μF 50V M
C1305	QEN51CM-106	BP E CAP.	10μF 16V M
C1307	QEN61VM-475Z	BP E CAP.	4.7μF 35V M
C1308	QFV71HJ-184MZ	TF CAP.	0.18μF 50V J
C1311	QEN61HM-105Z	BP E CAP.	1μF 50V M
C1313	QFV71HJ-154MZ	TF CAP.	0.15μF 50V J
C1317	QEN61HM-105Z	BP E CAP.	1μF 50V M
C1318	QCF31HP-103AZ	CH C CAP.	0.01μF 50V P
C1401	QEE61VK-105BZ	TAN. CAP.	1μF 35V K
C1412	QEH61CM-108M	E CAP.	1000μF 16V M
C1413	QEH61CM-477M	E CAP.	470μF 16V M
C1414	QCY32HK-561AZ	C CAP.	560pF 500V K
C1415	QETC1VM-107Z	E CAP.	100μF 35V M
C1416	QETB1VM-477	E CAP.	470μF 35V M
C1419	QEN52AM-474	BP E CAP.	0.47μF 100V M
C1502	QFP31HJ-332S	PP CAP.	3300pF 50V J
C1517	QEH62CM-105MZ	E CAP.	1μF 160V M
C1518	QETB2CM-476	E CAP.	47μF 160V M
C1519	QFZ0089-534S	MPP CAP.	0.53μF 200V J
C1521	QFZ0081-2201S	MPP CAP.	2200pF 1600V ±3%
C1522	QFD20081-3501S	PP CAP.	3500pF 1600V ±3%
C1523	QFM72DK-103M	M CAP.	0.01μF 200V K
C1524	QFM72DK-333M	M CAP.	0.033μF 200V K
C1525	QFZ0081-2001S	MPP CAP.	2000pF 1600V ±3%
C1526	QFM72AK-154M	M CAP.	0.15μF 100V K
C1528	QET52ER-475	E CAP.	4.7μF 250V M
C1529	QEH61CM-477MZ	E CAP.	470μF 25V M
C1701	QETC1CM-107Z	E CAP.	100μF 16V M
C1702	QETC1VM-107Z	E CAP.	100μF 35V M
C1951	QETB2CM-476	E CAP.	47μF 160V M
TRANSFORMER			
T1502	CE40361-00B	SW DRIVE TRANSF	
T1503	CE40381-00A	SIDE PIN TRANSF	
COIL			
L1001	A49468-101	PEAKING COIL	100μH
L1101	CELP006-100Z	PEAKING COIL	10μH
L1201	CELP006-100Z	PEAKING COIL	10μH
L1203	CELP006-100Z	PEAKING COIL	10μH
L1301	CELP006-100Z	PEAKING COIL	10μH
L1501	A04725-1000	PEAKING COIL	1000μH
L1502	A39934	LINIARITY COIL	
L1503	CE41238-00A	WIDTH COIL	
L1504	A39835	LIN. COIL	
L1505	CE41238-00A	WIDTH COIL	
L1506	CJ30030-043	HEATER CHOKE	
L1507	A76186-1000Z	PEAKING COIL	1000μH
DIODE			
D1001	1SS133-Y	SI. DIODE	
D1002	1SS133-Y	SI. DIODE	
D1101	1SS133-Y	SI. DIODE	
D1301	1SS133-Y	SI. DIODE	
D1401	1SR124-400-HJ	SI. DIODE	
D1402	U19E-FK	SI. DIODE	
D1403	1SR124-400-HJ	SI. DIODE	
D1404	1SS146-Y	SI. DIODE	
D1405	05AZ75-R	ZENER DIODE	

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
DIODE			
D1406	RD10E (B1)	ZENER DIODE	
D1407	1SS133	SI. DIODE	
D1408	1SS133	SI. DIODE	
D1501	1SS146-Y	SI. DIODE	
D1502	RD12E (B1)	ZENER DIODE	
D1503	V19E	SI. DIODE	
D1504	1SR124-400-HJ	SI. DIODE	
D1505	V19E	SI. DIODE	
D1506	1SR124-400-HJ	SI. DIODE	
D1507	1SR124-400-HJ	SI. DIODE	
D1508	RM2C-LFA1	SI. DIODE	
D1509	U19E-FK	SI. DIODE	
D1510	1SS133-Y	SI. DIODE	
D1511	V19E	SI. DIODE	
D1512	U19E-FK	SI. DIODE	
D1513	MA4220 (M) -Y	ZENER DIODE	
D1514	RD12E (B)	ZENER DIODE	
D1516	RD18E (B)	ZENER DIODE	
D1517	1SS146-Y	SI. DIODE	
D1518	1SS81	SI. DIODE	
D1601	1SS133-Y	SI. DIODE	
D1602	1SS133-Y	SI. DIODE	
D1604	1SS133-Y	SI. DIODE	
D1605	1SS133-Y	SI. DIODE	
D1701	HZ7B2LV1	ZENER DIODE	
D1702	V19E	SI. DIODE	
D1901	1SS133-Y	SI. DIODE	
TRANSISTOR			
Q1002	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1003	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1005	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1006	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1007	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1008	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1009	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1011	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1013	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1014	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1015	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1016	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1017	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1018	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1019	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1020	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1021	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1022	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1023	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1024	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1025	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1026	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1027	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1028	DTC-124	SI. TRANSISTOR	
Q1029	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1103	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1104	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1105	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1106	2SC1959 (Y) -Y	SI. TRANSISTOR	

SYMBOL NO.	PART NO.	PART NAME	REMARKS
TRANSISTOR			
Q1107	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1108	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q1109	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1110	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1111	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q1112	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1113	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1114	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1115	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1116	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1117	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1202	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1203	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1204	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1208	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q1209	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1210	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1211	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1212	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1213	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1214	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1302	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1303	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1304	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1305	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1306	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1307	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1308	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q1309	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1310	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1311	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q1312	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1313	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1314	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q1315	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1316	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1317	2SC1959 (Y) -Y	SI. TRANSISTOR	
Q1401	2SD637 (Q, R)	SI. TRANSISTOR	
Q1501	2SC1627A-Y	SI. TRANSISTOR	
Q1502	2SD1426	SI. TRANSISTOR	H. OUT
Q1503	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1504	2SC2555	SI. TRANSISTOR	
Q1505	2SD637 (Q, R)	SI. TRANSISTOR	
Q1506	2SD1133 (C, D) -L	SI. TRANSISTOR	
Q1507	2SC1685	SI. TRANSISTOR	
Q1508	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q1509	2SD1133 (C, D) -L	SI. TRANSISTOR	
Q1510	2SD637 (Q, R)	SI. TRANSISTOR	
Q1601	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1602	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1904	2SD982	SI. TRANSISTOR	
IC			
IC1001	AN5860	I. C. (M)	
IC1002	AN5867K-S	I. C.	
IC1004	M51493P	I. C. (M)	
IC1005	AN5860	I. C. (M)	
IC1006	AN5860	I. C. (M)	
IC1401	AN5515	I. C. (M)	

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
IC IC1501	HA11423	I. C.	
OTHERS DL1001 DL1002 DL1101 DL1301 RY1501	CE41360-001 CE41360-001 CE41361-001 CE41361-001 CESK006-001	DELAY LINE DELAY LINE DELAY LINE DELAY LINE RELAY	
R1704	QRZ0055-4R7M	F R	4.7 Ω 1W J
R1901	QRZ0055-561M	F R	560 Ω 1W J

CRT SOCKET P.C.B. Ass'y (FX-3013A)

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR R3051 R3055 R3154 R3157 R3158	QRG029J-153 QRG019J-682S QRG029J-153 QRG019J-682S QRG029J-153	OM R OM R OM R OM R OM R	15k Ω 2W J 6.8k Ω 1W J 15k Ω 2W J 6.8k Ω 1W J 15k Ω 2W J
R3254 R3257 R3258 R3354 R3357	QRG029J-153 QRG019J-682S QRG029J-153 QRG029J-153 QRG019J-682S	OM R OM R OM R OM R OM R	15k Ω 2W J 6.8k Ω 1W J 15k Ω 2W J 15k Ω 2W J 6.8k Ω 1W J
R3358	QRG029J-153	OM R	15k Ω 2W J
CAPACITOR C3052 C3053 C3055	QET52ER-106 QETB2EM-336 QFH63BK-223M	E CAP. E CAP. MM CAP.	10 μ F 250V R 33 μ F 250V M 0.022 μ F 1250V K
DIODE D3051 D3052 D3053 D3054 D3151	1SS82 1SS82 1SS82 1S1555 RD20E (B)	SI. DIODE SI. DIODE SI. DIODE SI. DIODE ZENER DIODE	
D3251 D3351	RD20E (B) RD20E (B)	ZENER DIODE ZENER DIODE	
TRANSISTOR Q3051 Q3151 Q3152 Q3251 Q3252	2SC1890A-C1 2SC2068 2SC1360 2SC2068 2SC1360	SI TRANSISTOR SI. TRANSISTOR SI. TRANSISTOR SI. TRANSISTOR SI. TRANSISTOR	
Q3351 Q3352	2SC2068 2SC1360	SI. TRANSISTOR SI. TRANSISTOR	
OTHERS A75522-C		CRT SOCKET	

F.R. CONTROL/LED/TALLY P.C.B. Ass'y (FX-4014A)

(1/1)

SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R R4136 R4137 R4139 R4236 R4237	QVPE804-103H QVPE804-103H QVPE804-103H QVPE804-103H QVPE804-103H	V R (UNDER R CUT V R (NORMAL R CUT V R (R DRIVE) V R (UNDER G CUT V R (NORMAL G CUT	OFF) 10k Ω B OFF) 10k Ω B 10k Ω B OFF) 10k Ω B OFF) 10k Ω B
R4239 R4336 R4337 R4339 R4704	QVPE804-103H QVPE804-103H QVPE804-103H QVPE804-103H QVCA012-CB53M	V R (G DRIVE) V R (UNDER B CUT V R (NORMAL B CUT V R (B DRIVE) V R (V HOLD)	10k Ω B OFF) 10k Ω B OFF) 10k Ω B 10k Ω B 5k Ω B
R4708 R4709 R4713 R4714 R4718	QVPE607-223M QVCA013-CB53M QVPE607-103M QVCA013-CB14M QVPE607-103M	V R (SUB PHASE) V R (PHASE) V R (SUB CHROMA) V R (CHROMA) V R (SUB APERTURE)	22k Ω B 5k Ω B 10k Ω B 10k Ω B 10k Ω B
R4721 R4726 R4728 R4732 R4733	QVCA013-CB14M QVCA013-CB53M QVPE607-103M QVPE607-473M QVCA013-CB14M	V R (APERTURE) V R (BRIGHT) V R (SUB BRIGHT) V R (SUB CONTRAST) V R (CONTRAST)	10k Ω B 5k Ω B 10k Ω B 47k Ω B 10k Ω B
RESISTOR R4702	QRD141J-182SY	C R	1.8k Ω 1/4W J
CAPACITOR C4050 C4701	QER51CM-106M QEN51CM-106	E CAP. BP E CAP.	10 μ F 16V M 10 μ F 16V M
DIODE D4701 D4901 D4902	1S1555-Y GL-5PG23 LD-761DU	SI. DIODE L E D L E D.	Power Tally
TRANSISTOR Q4701 Q4702 Q4703 Q4704 Q4705	2SC1815 (O, Y) -L 2SC1815 (O, Y) -L 2SA1015 (O, Y) -L 2SC1815 (O, Y) -L 2SC1815 (O, Y) -L	SI. TRANSISTOR SI. TRANSISTOR SI. TRANSISTOR SI. TRANSISTOR SI. TRANSISTOR	
IC IC4005	TC4053BP	I. C.	
OTHERS S4001 S4701 S4702	CM40495-002 CM42758-001 QSP2C22-C01 QST2931-C01 QSS1N12-C01	BUTTON KNOB PUSH SWITCH PUSH SWITCH SLIDE SWITCH	($\times 9$) Set Up Set Up User control SWs Tally

VIDEO/RGB INPUT P.C.B. Ass'y (FX-5003A)

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
DIODE			
D5101	1S1555-K	SI. DIODE	
D5102	1S1555-K	SI. DIODE	
D5201	1S1555-K	SI. DIODE	
D5202	1S1555-K	SI. DIODE	
D5301	1S1555-K	SI. DIODE	
D5302	1S1555-K	SI. DIODE	
TRANSISTOR			
Q5101	2SC1959 (O. Y)	SI. TRANSISTOR	
Q5201	2SC1959 (O. Y)	SI. TRANSISTOR	
Q5301	2SC1959 (O. Y)	SI. TRANSISTOR	
OTHERS			
S5001	QSS1C22-C02	SLIDE SWITCH	Video. A
S5002	QSS1C22-C02	SLIDE SWITCH	Video. B
S5003	QSS1C22-C02	SLIDE SWITCH	Sync
S5004	QSS1C22-C02	SLIDE SWITCH	Y/C
S5005	QSS1C22-C02	SLIDE SWITCH	Component/RGB
S5006	QSS1C22-C02	SLIDE SWITCH	Notch
S5007	QSS1C22-C02	SLIDE SWITCH	Fast/Normal
S5008	QSS1C22-C02	SLIDE SWITCH	MII/Betacam
S5101	QSS1C22-C02	SLIDE SWITCH	R/R-Y
S5201	QSS1C22-C02	SLIDE SWITCH	G/Y
S5301	QSS1C22-C02	SLIDE SWITCH	B/B-Y

DECODER/PULSE CROSS P.C.B. Ass'y (FX-6011A)

(1/3)

SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R			
R6648	QVPC609-102H	V R (CONT)	1kΩ B
R6658	QVPC609-203H	V R (COLOR)	20kΩ B
R6662	QVPC609-202H	V R (LISSAJOUS AD J)	2kΩ B
R6683	QVPC609-503H	V R (P. CH PULS)	50kΩ B
R6833	QVPC609-503H	V R (PULSE CROSS)	50kΩ B
CAPACITOR			
C6614	QAT3110-300A	TRIMMER CAP	20pF
C6618	QCF31HP-102AZ	CH C CAP.	1000pF 50V P
C6619	QCF31HP-102AZ	CH C CAP.	1000pF 50V P
C6621	QCF31HP-103AZ	CH C CAP.	0.01μF 50V P
C6624	QCF31HP-103AZ	CH C CAP.	0.01μF 50V P
C6626	QAT3110-300A	TRIMMER CAP	20pF
C6627	QAT3110-300A	TRIMMER CAP	20pF
C6630	QEN61HM-475Z	BP E CAP.	4.7μF 50V M
C6632	QFV71HJ-563MZ	TF CAP.	0.056μF 50V J
C6635	QAT3110-300A	TRIMMER CAP	20pF
C6638	QCF31HP-103AZ	CH C CAP.	0.01μF 50V P
C6643	QFV71HJ-224MZ	TF CAP.	0.22μF 50V J
C6644	QCT25CH-101Z	C CAP.	100pF
C6645	QAT3110-300A	TRIMMER CAP	20pF
C6646	QCT25CH-101Z	C CAP.	100pF
C6649	QCF31HP-223AZ	CH C CAP.	0.022μF 50V P
C6651	QCF31HP-223AZ	CH C CAP.	0.022μF 50V P
C6654	QFV81HJ-224M	TF CAP.	0.22μF 50V J
C6655	QFV81HJ-224M	TF CAP.	0.22μF 50V J
C6658	QAT3110-300A	TRIMMER CAP	20pF
C6659	QAT3110-300A	TRIMMER CAP	20pF
C6807	QFV71HJ-224MZ	TF CAP.	0.22μF 50V J
C6808	QCY31HK-102Z	C CAP.	1000pF 50V K
C6812	QFZ0103-683MZ	MYLAR CAP.	0.068μF
C6825	QFP31HJ-183S	PP CAP.	0.018μF 50V J
C6832	QCY31HK-821	C CAP.	820pF 50V K
TRANSFORMER			
T6601	CE40394-001	B P TRANSF	
COIL			
L6601	A76186-6.8Z	PEAKING COIL	6.8μH
L6602	A76186-8.2Z	PEAKING COIL	8.2μH
L6603	A76186-8.2Z	PEAKING COIL	8.2μH
L6604	A76186-4.7Z	PEAKING COIL	4.7μH
L6605	A76186-39Z	PEAKING COIL	39μH
DIODE			
D6401	1SS146-Y	SI. DIODE	
D6402	1SS133-Y	SI. DIODE	
D6403	1SS133-Y	SI. DIODE	
D6404	MA4091 (H) -Y	ZENER DIODE	
D6405	1SS133-Y	SI. DIODE	
D6601	1SS133-Y	SI. DIODE	
D6602	1SS133-Y	SI. DIODE	
D6603	1SS133-Y	SI. DIODE	
D6604	1SS133-Y	SI. DIODE	
D6605	1SS133-Y	SI. DIODE	
D6606	1SS133-Y	SI. DIODE	
D6607	1SS133-Y	SI. DIODE	
D6608	1SS133-Y	SI. DIODE	
D6609	1SS133-Y	SI. DIODE	
D6610	RD8.2E (B3)	ZENER DIODE	
D6611	1SS133-Y	SI. DIODE	

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
DIODE			
D6612	1SS133-Y	SI. DIODE	
D6613	1SS133-Y	SI. DIODE	
D6614	1SS133-Y	SI. DIODE	
D6616	1SS133	SI. DIODE	
D6617	1SS133	SI. DIODE	
D6801	1SS133-Y	SI. DIODE	
D6802	1SS133-Y	SI. DIODE	
D6803	1SS133-Y	SI. DIODE	
TRANSISTOR			
Q6401	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q6601	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6602	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6603	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6604	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6605	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6606	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6607	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6608	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6609	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6610	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6611	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6613	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6614	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6615	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6616	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6617	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6618	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6619	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6620	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q6801	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q6802	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6803	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6804	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6805	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q6806	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6807	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q6808	2SA1015 (O, Y) -Y	SI. TRANSISTOR	
Q6809	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6810	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6811	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6812	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6813	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6814	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6815	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6816	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6817	2SC1815 (O, Y) -Y	SI. TRANSISTOR	
Q6818	2SC1815 (O, Y)	SI. TRANSISTOR	
IC			
IC6601	LA7016	I. C.	
IC6602	TC4066BP	I. C. (M)	
IC6603	AN5625N	I. C.	
IC6604	TC4538BP	I. C. (M)	
IC6801	TC4538BP	I. C. (M)	
IC6802	TC4066BP	I. C. (M)	
IC6803	TC4538BP	I. C. (M)	
IC6804	TC4538BP	I. C. (M)	
IC6805	TC4066BP	I. C. (M)	
IC6806	TC4538BP	I. C. (M)	

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
IC			
IC6807	TC4538BP	I. C. (M)	
OTHERS			
DL6601	CE41042-002	DELAY LINE	
DL6602	CE41353-001	DELAY LINE	
DL6603	CE41430-001	DELAY LINE	
DL6604	CE41489-001	1H DELAY LINE	
X6601	A76090	CRYSTAL	

POWER P.C.B. Ass'y (FX-9010A)

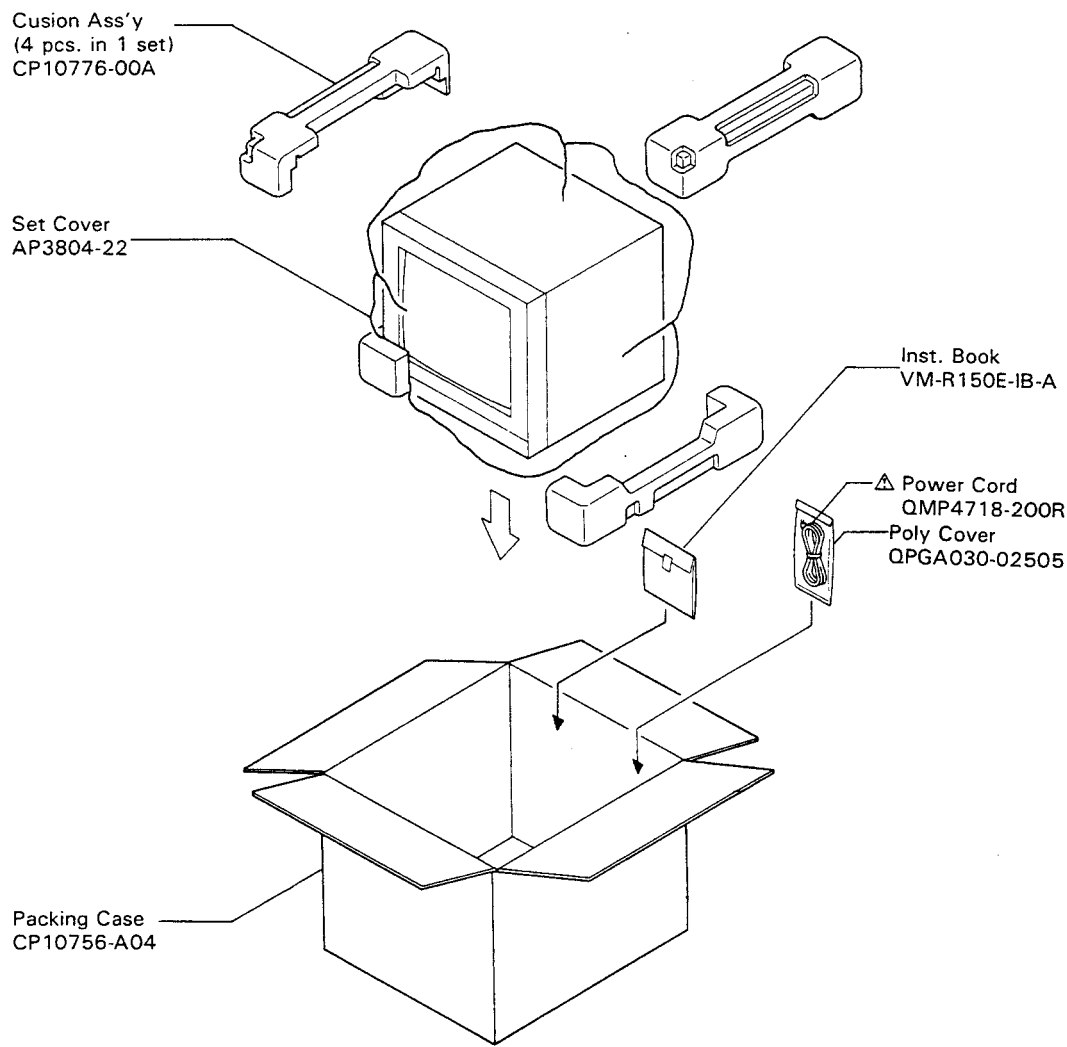
(1/2)

SYMBOL NO.	PART NO.	PART NAME	REMARKS
△ VARIABLE R R9920	QVPHA03-203M	V R (B1 ADJ)	20kΩ B
△ RESISTOR R9902	QRG039J-473A	OM R	47kΩ 3W J
△ R9904	QRZ0079-8R2	UNF R	8.2 Ω 7W K
△ R9905	QRM055K-R22	MP R	0.22 Ω 5W K
△ R9906	QRM055K-R47	MP R	0.47 Ω 5W K
△ R9907	QRD122J-124S	C R	120kΩ 1/2W J
△ R9908	QRC122K-104	COMP. R	100kΩ 1/2W K
△ R9909	QRD122J-394S	C R	390kΩ 1/2W J
△ R9910	QRD122J-394S	C R	390kΩ 1/2W J
△ R9911	QRZ0069-472	UNF R	4.7kΩ 5W K
△ R9913	QRG029J-220A	OM R	22 Ω 2W J
△ R9918	QRV142F-2702	MF R	27kΩ 1/4W F
△ R9922	QRC122K-104	COMP. R	100kΩ 1/2W K
△ R9923	QRD122J-473S	C R	47kΩ 1/2W J
△ R9924	QRV142F-1002	MF R	10kΩ 1/4W F
△ R9926	QRD149J-100S	C R	10 Ω 1/4W J
R9932	QRM055K-R47	MP R	0.47 Ω 5W K
△ CAPACITOR C9901	QFZ9022-224M	M. F. CAP.	0.22μFAC250V M
△ C9902	QFZ9022-104M	MF CAP.	0.1μFAC250V M
△ C9903	QCZ9036-472M	C CAP.	4700pFAC400V M
△ C9904	QCZ9036-472M	C CAP.	4700pFAC400V M
△ C9905	QCZ9036-472M	C CAP.	4700pFAC400V M
△ C9906	QCZ9036-472M	C CAP.	4700pFAC400V M
△ C9907	QFZ9022-224M	M. F. CAP.	
△ C9910	QE20084-227R	E CAP.	220μF 400V M
△ C9911	QE20084-227R	E CAP.	220μF 400V M
△ C9912	QCY32HK-222A	C CAP.	2200pF 500V K
△ C9916	QFP31HJ-332S	PP CAP.	3300pF 50V J
△ C9917	QFP31HG-332S2	PP CAP.	3300pF 50V G
△ C9918	QEH152CM-476M	E CAP.	47μF 160V M
△ C9919	QEH152CM-227M	E CAP.	220μF 16V M
△ C9921	QEH152CM-227M	E CAP.	220μF 16V M
△ C9922	QEM51VM-107M	E CAP.	100μF 35V M
△ C9923	QE20094-477R	E CAP.	470μF 35V M
△ C9924	QEH151HM-106M	E CAP.	10μF 50V M
△ C9925	QEH152CM-476M	E CAP.	47μF 160V M
△ C9927	QEM51VM-107M	E CAP.	100μF 35V M
△ C9928	QCY32HK-271M	C CAP.	270pF 500V K
△ C9929	QCZ9036-472M	C CAP.	4700pFAC400V M
△ C9931	QCZ9036-472M	C CAP.	4700pFAC400V M
△ C9950	QFZ0083-104M	M CAP.	0.1μF 50V K
△ TRANSFORMER T9901	CE40967-00H	SW TRANSF	
△ COIL L9901	A76186-6.8	PEAKING COIL	6.8μH
△ DIODE D9901	TVR4N	SI. DIODE	
△ D9902	TVR4N	SI. DIODE	
△ D9903	TVR4N	SI. DIODE	
△ D9904	TVR4N	SI. DIODE	
△ D9906	RG2A	SI. DIODE	
△ D9907	RD10E (B)	ZENER DIODE	
△ D9908	EG1Z	SI. DIODE	

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
△ DIODE D9909	RD13E (B3)	ZENER DIODE	
△ D9910	EG1Z	SI. DIODE	
△ D9911	RC2A	SI. DIODE	
△ D9912	RG4C-LFK2	SI. DIODE	
△ D9913	RGP10J	SI. DIODE	
D9914	RG4C-LFK2	SI. DIODE	
D9916	EG1Z	SI. DIODE	
△ TRANSISTOR Q9901	2SC3461	SI. TRANSISTOR	or 2SC3552, 2SC3680
△ Q9902	2SD1409	SI. TRANSISTOR	
△ Q9903	2SC1815	SI. TRANSISTOR	
△ Q9904	2SC3461	SI. TRANSISTOR	or 2SC3552, 2SC3680
△ Q9914	SF5J42	THYRISTOR	
△ IC IC9901	S1-8100D	I. C.	
△ FUSE F9901	QMF51E2-3R15S	FUSE	3.15A
△ F9902	QMF51E2-1R0S	FUSE	1A
△ OTHERS LF9901	CE40847-00C	LINE FILTER	
△ NF01	CE40811-00Q	NOISE FILTER	
△ TH9901	A76038-T	POSISTOR	
△ TH9902	CE40643-001	POSISTOR	

■ PACKING DIAGRAM



● KNOB POSITION FOR SHIPMENT

KNOB	POSITION	KNOB	POSITION	KNOB	POSITION
POWER	OFF	CONTRAST	CLICK POSITION	RGB/COMP	COMP
SCAN	WIDE	BRIGHT	"	AFC	NORMAL
COLOR/MONO	COLOR	CHROMA	"	NOTCH	OFF
PULSE CROSS	OFF	PHASE	"	MII/BETACAM	MII
INPUT	A	V.HOLD	BEST POINT OF INTERLACE	SET UP	OFF
SYNC	INT	BLUE CHECK	OFF	TERMINATION SW	75Ω SIDE (ALL)
APERTURE	CLICK POSITION				

JVC

VICTOR COMPANY OF JAPAN, LIMITED
TELEVISION RECEIVER DIVISION 1106 Iwai-city, Ibaraki-prefecture, 306-06, Japan